

WHY DOES GASOLINE COST SO MUCH?

BLACK GOLD STRANGLEHOLD

THE MYTH OF SCARCITY AND THE POLITICS OF OIL



Jerome R. Corsi, Ph.D.
and **Craig R. Smith,**
CEO, Swiss America Trading Corporation

It is estimated that Americans consume more than 25 percent of the world's oil but have control over less than 3 percent of its proven supply. This extremely unbalanced pattern of consumption makes it possible for foreign governments, corrupt political leaders, terrorist organizations, and oil conglomerates to place the citizens and economy of the United States in a stranglehold of supply and demand. There is no greater proof of this than the direct relationship between skyrocketing gas prices and the exploding wealth of those who control the supply of oil.

In *Black Gold Stranglehold*, Jerome R. Corsi and Craig R. Smith expose the fraudulent science that has been sold to the American people in order to enslave them: the belief that oil is a fossil fuel and a finite resource. On the contrary, this book presents authoritative research, currently known mostly in the scientific community, that oil is not a product of decaying dinosaurs and prehistoric forests. Rather, it is a natural product of the earth. The scientific evidence cited by Corsi and Smith suggests that oil is constantly being produced by the earth, far below the planet's surface, and that it is brought to attainable depths by the centrifugal forces of the earth's rotation.

In great detail Corsi and Smith explore the international and domestic politics of oil production and consumption. This includes the wealth and power of major oil conglomerates, the manipulation of world economies by oil-producing states and

(continued on back flap)

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To the most important women in our lives:

Our daughters—

ALEXIS CORSI, HOLLY SMITH, and KATIE SMITH

*whose future depends upon America having
the energy to fuel us ahead*

Our mothers—

ALICE E. CORSI and JOAN L. SMITH

*who have had the patience and wisdom to listen
to our ideas and encourage us, even when
they did not necessarily agree*

Our wives—

MONICA CORSI and MELISSA SMITH

who have believed in us even when we doubted ourselves

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PREFACE

Any new interpretation of nature, whether a discovery or a theory, emerges first in the mind of one or a few individuals.

—THOMAS S. KUHN

The Structure of Scientific Revolutions (1962)

IF YOU BELIEVE THAT oil is fossil fuel, then reading this book may well change your thinking forever. If you are convinced that human activity is warming up the earth and that disastrous climate change will occur unless we stop burning oil and gas, then what we say here will either anger you or cause you to reexamine the evidence for your opinion. If you believe the United States has no alternative but to slip backward in a world running out of oil, then we challenge you to consider our view that we in the United States have the opportunity to help give birth to a new generation of oil politics and economics that will eclipse in greatness what we have already experienced.

The genesis of this book began over fifty years ago. Jerry Corsi has never stopped thinking about a science article he read in the 1950s, that the Soviets were discovering oil deep below the surface of the earth. That thought stayed with him, along with the conviction that the fossil fuel theory for the origin of oil was probably not correct. For decades he wondered if he would ever find the time or the opportunity to explore this thought seriously.

For some twenty-five years, Craig Smith has run an investment business trading in numismatic-quality collectible gold coins. Craig and Jerry met during the 2004 presidential campaign. They were introduced by mutual friend and colleague Joseph Farah, the founder of WorldNetDaily and the principal creator of the Web site, the radio show, and the publishing company affiliated in the WorldNetDaily family of companies. Craig had worked with Joseph for many years, focusing largely on the Web site and the radio show. Jerry Corsi, the coauthor of *Unfit for Command: Swift Boat Veterans Speak Out Against John Kerry*, was considering working with Joseph on his next book.

Craig wrote the foreword to that book, *Atomic Iran: How the Terrorist Regime Bought the Bomb and American Politicians*. While working on that project, Jerry discussed with Craig his longtime fascination with the idea that oil was not fossil fuel. Craig too was fascinated. He added to the topic his many years of dealing with gold and his understanding of financial markets. For twenty-five years Craig has written a newsletter on geopolitical world and economic events. Craig also has extensive radio and television experience, having hosted both nationally syndicated coast-to-coast shows and having appeared as a guest on hundreds of radio and television interviews. Both Jerry and Craig felt they had the experience to develop this story and to bring it to the public.

Next Jerry and Craig discussed the idea with Ron Pitkin, the president and publisher of Cumberland House. Ron, who was then getting ready to publish *Atomic Iran*, liked the idea of a book on oil, so he checked with Joseph Farah to see if he bought into the concept. Joseph believed *Black Gold Stranglehold* would follow on the oil politics discussed in *Atomic Iran* and that the book could make a strong contribution on its own merit, so we proceeded to a contract to write this book. Ron and Joseph proposed adding the new book into the WND imprint at Cumberland House. Assistant publisher Stacie Bauerle agreed, and this project was born. As you will see in the following pages, much of what we learned in publishing *Atomic Iran* was also important here. Iran stands at the center of the next phase of developing world oil dynamics. Whatever happens with the radical Islamic theocracy ruling Iran will ultimately affect us all at the gas pump.

We have wondered if the book would get attention or if our natural critics would try to ignore us. We knew many of our arguments were supportive of the oil industry, but even here we were confident we would not win universal agreement from oil company executives, scientists, or engineers. Alternatives to the fossil fuel theory have been proposed for more than 150 years, yet the alternative theorists have always had to fight against conventional wisdom in order to be heard at all.

We also believed our politics would draw *ad hominem* attacks from our critics, as have our other books and political efforts. Personal criticism usually comes when critics have nothing else to say, otherwise they would focus on the ideas, arguments, and evidence directly. We do not mind the controversy; actually we will welcome it. We have written this book because we believe these arguments need to be heard. We did not receive financial support from any person or company within the energy industry as we researched and wrote this book. Yet we will not be surprised if our critics suggest differently.

Simply stated, we believe those who say we are running out of oil are wrong. We have plenty, maybe even an inexhaustible amount available deep within the earth. Nor do we believe the burning of hydrocarbon fuels is warming up the earth such that we are likely to experience catastrophic climate changes. There is solid scientific evidence and argument that back up these views. Please don't listen to those who try to discredit us, trying to discourage you from considering anything the environmentalists and conservationists don't want you to hear. We ask you to read the book and consider the evidence for yourself. Then make up your mind.

We have tried to write the science, economics, and politics in this book so that our meaning can be easily understood. More detailed, technical explanations are possible, but we believe the time for these is later, after the major ideas have been brought forth, hopefully, to a wide audience of readers. Understanding the science is important to seeing the power of the idea that oil cannot possibly be fossil fuel. The science sets the stage for exploring the economics and politics of oil. If we are not running out of oil, world politics need not be based on a scramble for a scarce resource. If global warming is a hoax, as we argue here, the politics

and economics of burning hydrocarbon fuels wisely takes on a new dimension, one that does not demand we simply use less oil to solve the supposed problem.

Many who read this book undoubtedly believe they are being robbed at the gas pump and by power companies over higher oil prices. They are worried that the wealth of America is being stolen by foreign interests who are extorting us for oil. Even though our view is optimistic, we agree that America today is in the grips of a stranglehold over oil. As we write this book, gasoline at five dollars or ten dollars a gallon is a real and frightening possibility on the horizon. Increasing U.S. dependence on foreign oil places us at the whim of corrupt and greedy foreign leaders. We also risk falling into the grasp of multinational oil corporations whose primary goal is to continue their ever-higher quarterly profits. Our oil money is also funding terrorists who are willing to attack us and our oil resources in order to destroy our economy and our way of life. This black gold stranglehold, we argue, threatens both our economic and our political futures. To break free we need to have a new understanding of the origin of oil, a new understanding of the true environmental consequences of burning oil, and a new understanding of the emerging alternatives to oil.

So hopefully the debate will begin with this book. With any luck, the main grounds of the debate will be substantive, especially because the substantive issues argued in these pages deserve our serious consideration. The future of oil is certain to remain center stage as a national and international concern, now as well as in the years and decades to come.

PART 1

THE MYTH OF FOSSIL FUELS

1

OIL, A FOSSIL FUEL?

The overwhelming preponderance of geological evidence compels the conclusion that crude oil and natural petroleum gas have no intrinsic connection with biological matter originating near the surface of the Earth. They are primordial materials which have been erupted from great depths.

—VLADIMIR B. PORFIR'YEV

Senior Petroleum Exploration Geologist for the
USSR, 1956

FOSSIL FUEL" IS A term that has become synonymous with "oil." We all say "fossil fuel" when we mean "oil," whether we are scientists, professional writers, journalists, or average people. Oil comes from ancient plants and dinosaurs. Doesn't everybody know that? The statement that oil is fossil fuel has become an axiom. Nobody needs to explain anything when the term "fossil fuel" is used. The code does not need to be translated. Fossil fuel—that's the end of the story. Even university textbooks make the reference without further explanation.

Yet the story is anything but clear. There is a competing theory—that the origin of oil has nothing to do with rotting ancient plants or decaying dinosaurs. Don't worry that you may never have heard about the "deep, abiotic theory of oil." Not many people have heard what you are about to read—that oil may well be a natural product of the earth, that oil may

still be in constant production by the earth, that oil may be readily available in abundant supplies at levels deep within the mantle of the planet.

Skeptical? Well, read on. We are about to challenge the generally unquestioned “truism” that oil is fossil fuel.

WORLD WAR II AND THE STRATEGIC IMPORTANCE OF OIL

The Allied nations had won World War II, but not without an enormous struggle. Europe was devastated, with most German cities reduced to rubble by relentless U.S. and British bombing attacks. The heaviest toll in human casualties was suffered by Russia, where some nineteen million civilians were killed. From 1937, when Japan invaded China, to 1945, when the war with Japan ended, more than sixty million people were killed worldwide, half of whom were civilians. Slaughter of this magnitude had never before been witnessed in human history.

As the war was drawing to a close, two Allied leaders, Franklin D. Roosevelt and Joseph Stalin, had the sense to call for important studies to be conducted. As we shall see, the United States learned little from the study ordered by Roosevelt. The Soviet Union, in sharp contrast, gained valuable strategic insight from the study Stalin commissioned.

Both studies focused on the strategic importance of oil, but the Soviets apparently learned much more than we did.

ROOSEVELT ORDERS THE STRATEGIC BOMBING SURVEY

On November 3, 1944, well before the end of the war, President Roosevelt issued a directive calling for a government study to determine whether or not all the bombing we had done in the war had served any purpose.¹ To many, the answer was obvious—the bombing reduced Germany and much of Europe to rubble. Why did we need a government study to prove that the bombing had contributed to our winning the war?

Yet, to Roosevelt, the question was more subtle. Granted, the bomb-

ing had destroyed some 3.6 million dwellings in Germany alone, leaving almost 7.5 million people homeless. But what precisely did dropping more than 2.7 million tons of bombs on the civilians of Europe accomplish? The bombing had helped the Allies to win the war. Still, had all the bombing been equally effective? Was it really necessary to bomb cities? This was a key question.

To some the answer was obvious. The scorched-earth model had been set in the American Civil War, when Gen. William T. Sherman burned a sixty-mile-wide path across central Georgia to the sea, beginning by incinerating Atlanta. In World War II we rained scorched earth from the sky. But the model was still total war, a concept approved by Abraham Lincoln, the Great Emancipator himself, a president revered for gentleness and sympathy even though his interior of steel called for the application of relentless violence to defeat the Confederacy. Citizens of the South were not spared the cruelty of the Union army as General Sherman pressed for victory, according to the plan Lincoln had approved.

Few after the Civil War had stopped to examine what exactly about Sherman's March to the Sea had been so effective. Was it the burning of Atlanta? Or was more accomplished by destroying the railroads? The Union army burning a bonfire of railroad ties and twisting the metal rails around trees, "Sherman's hairpins" as they were called, produced a powerful image. In that era, without the railroads, troops could not be moved or resupplied. The South came to a halt. Sherman and Lincoln had both worked for railroad companies, and so they understood what they were doing.

As World War II was drawing to a close, Roosevelt had the insight to ask the type of important questions that are rarely asked at the end of a successful war. The president's assumption was that all the bombing was not equally effective. Perhaps some of the bombing had been wasted effort or, even worse yet, counterproductive.

In 1944 these were daring questions to ask. America and Great Britain had been determined to crush the Nazis in defeat. We were incensed at the determination of the German people to start a second world war within the span of little more than two decades, angry at the bombing of

London, outraged at the inhuman genocide we were coming to see as the Holocaust. Bombing Germany into the Stone Age seemed a reasonable, almost satisfying solution to ending the war.

The report on the bombing in Europe was completed first, with the final report published on September 30, 1945, only one month after the atomic bomb attacks on Japan.

The answers Roosevelt's successor received were surprising. One of our most important targets was to knock out the German Luftwaffe, the goal being to achieve air supremacy over Europe.

The aerial bombing attack on the Nazi aircraft industry had begun in the summer of 1943. In the autumn of 1944 the tactics changed. The heavy losses suffered over Schweinfurt caused the U.S. Army Air Force to revise tactics away from daylight bombing accomplished by heavily armed but unescorted bombers flying in well-designed, tight formations. When the P-51 Mustang fighter became available in December 1943, bombing missions were redesigned to stay within range of the long-distance fighter escorts. Having fighter planes accompany the bombers reduced bomber losses substantially. The bombing attack on the German airplane industry culminated in the last week of February 1944, when 3,636 tons of bombs were dropped on airframe plants. In that week and the days following, every known aircraft factory in Germany was hit.

Still, the Nazis continued to produce planes. Surprisingly, in 1944 they accepted a total of 39,807 aircraft of all kinds, when the number accepted in 1942 before the bombing attacks began had only been 15,596. German aircraft production had actually increased despite the massive bombing of aircraft plants. Why? The bombing destroyed the buildings, but the machines "showed remarkable durability." The Germans reorganized the management of the aircraft plants and subdivided production into many small units that were immune to massive bombing raids.

As the aircraft manufacturing plants were being destroyed, the Germans adapted, learning how to recover the machinery and disperse the manufacturing. The result was clear—bombing the plants had not slowed down the Nazis' ability to make new airplanes.

The air attack on ball-bearing plants showed the same results. We fo-

cused attacks on these facilities slow down production of machinery that required ball bearings to move. Even heavy artillery pieces were generally built with wheels, so they could be moved around. If the German ability to produce ball bearings was destroyed, then the Germans would lose the ability to manufacture all forms of war vehicles that required wheels, including tanks and troop carriers, even airplanes.

Again the story turned on the bombing raids over Schweinfurt. On October 14, 1943, a devastating and pivotal bombing raid was conducted on the ball-bearing plants in and around Schweinfurt. More than 228 bombers were viciously and effectively attacked by German fighters as soon as the B-17s flew out of the range of their fighter escorts. The USAAF lost 62 bombers, and another 138 were damaged, many beyond repair. As a result, further attacks on the Schweinfurt ball-bearing plants were suspended for four months.

During this time the Nazis appointed a ball-bearing “czar” who had unlimited authority to requisition men and materials. Again the Germans realized that the machines had been much less damaged than had been the plants. They dispersed the industry and drew upon excess ball-bearing supplies. By the autumn of 1944 the bombing raids were back to previous levels. Still, the Strategic Bombing Survey concluded, “There is no evidence that the attacks on the ball-bearing industry had any measurable effect on essential war production.”² Despite massive bombing and heavy losses, the Germans still had all the ball bearings they needed.

Bombing civilians produced equally unexpected results. We attacked German cities with high-explosive and with incendiary bombs, the latter of which were found to be four and five times more destructive given their ability to cause secondary damage from widespread fires that burned out of control. Still, the morale of the German population proved resilient. If anything, the bombing of civilian centers actually convinced the German people that the Allies were vicious, confirming Hitler’s argument that Germany’s enemies needed to be defeated at all costs.

Right to the end, the mental reaction of the German people “showed surprising resistance to the terror and hardships of repeated air attack, to the destruction of their homes and belongings, and to the conditions

under which they were reduced to live.”³ German morale remained high, and the German people continued to be confident in ultimate victory. As long as the physical means of production remained available, the Germans continued to work in war production, even if they were reduced to living in the streets.

Surprisingly, the study concluded, the only bombing attacks that proved truly effective were those that targeted oil. By the end of the war, the Germans could produce Messerschmitts, but they had no fuel with which to fly them. The output of aviation gasoline from synthetic plants fell from 316,000 tons per month, when the air attacks began, in 1943 to 5,000 tons in September 1944, when every major plant had been hit.

The Germans viewed the attack on oil as catastrophic. Even when the Nazis appointed an “oil czar,” nothing could be done. Synthetic oil plants were complex structures that could not be easily dispersed. Without fuel, the Nazi war machine came to a grinding halt. Panzers could not move, armies could not redeploy efficiently, airplanes could not get off the ground. Without oil, the *Wehrmacht* could not make war.

Of all the types of attacks analyzed by the Strategic Bombing Survey, including attacks on railroads and transportation centers, the attacks on the German oil industry proved to be the most effective. We might well have been better advised to have avoided attacking cities altogether, focusing virtually all our energy on bombing out the Nazi oil industry as our top priority. Bombing the cities only resulted in making the German people angry and more determined to continue fighting. Bombing the war-manufacturing industry scored no knockout blow. Yet, in sharp contrast, bombing oil-production facilities brought the Nazi army to a halt. Oil was the lifeblood the *Wehrmacht* needed to keep fighting.

Yet the U.S. military gained little insight from this study. Even as the Strategic Bombing Survey was completing its study of the bombing in Europe, President Harry S. Truman made the decision to drop atomic bombs on Hiroshima and Nagasaki. The trauma of losing two major cities, each with one bomb dropped from a solitary airplane, was enough to cause the Japanese emperor call off the suicidal defense of the homeland planned by the Japanese military.

The atomic bomb attacks on Japan were not the first time the Allies had killed massive numbers of civilians by bombing. The fire-bombing of Dresden and Tokyo was clear proof that the Allied air commands had mastered the techniques required to create a fire storm that could be relied upon to incinerate virtually all the residents of a city, including those who foolishly thought they could save themselves by jumping into rivers or fountains. With the atomic bomb, the order of magnitude was different. One bomb was dropped and one city was destroyed in an instant, a flash of light, and a mushroom cloud the only evidence an attack had occurred.

We brought Germany to her knees by depriving the Nazis of oil, not by bombing its cities. Yet the images of the atomic bomb attacks on Japan were too powerful for the mind to comprehend. Hiroshima and Nagasaki drowned out the core message of the Strategic Bombing Study. Instead, America learned Sherman's lesson all over again, that attacking civilians could end a war. The Japanese had shown in the island warfare of Iwo Jima and Okinawa that they were willing to fight from caves, with or without oil. The militarism of Japan was only blinded in the flash of the atomic bombs that destroyed Hiroshima and Nagasaki.

When the United States waged war in Vietnam, we bombed forests against an enemy that used no oil to move troops into battle. The Vietcong fought on pockets of rice, and the Ho Chi Minh Trail was more a footpath than an autobahn. Still, we bombed with the predictable result that we hardened the people of North Vietnam to resist us, convincing them that the communists were right in portraying us as inhumane imperialists, not a democracy fighting for their freedom. The light of the atomic flash had also blinded our thinking. We forgot important lessons about conventional bombing that could have saved us from the type of wasteful bombing in Vietnam that helped our enemies turn the tide of American public opinion against the war.

STALIN ORDERS A STUDY OF OIL

Stalin never lost sight of oil's strategic importance.

The Ploesti refineries in Romania, together with the oil refineries in

Hungary, were responsible for supplying about a quarter of the total oil available to the Nazis in 1943. In August 1943 the Allies attacked Ploesti with a daring and costly low-level bombing raid. One year later the Soviets had occupied the Hungarian oil fields, depriving the Germans of this vital supply. Stalin understood the importance of oil. The Russians had two advantages in defeating the Nazis—the severity of the Russian winter that had defeated even Napoleon and the likelihood that the Nazis would run out of oil, especially if the Allies continued to attack Nazi oil resources with a vengeance. Once the war was over, Stalin determined that the Soviet Union would never be vulnerable because of a dependence on foreign oil. He resolved that Russia would become oil self-sufficient as part of his plans for expanding communism and Soviet domination worldwide.

As World War II was coming to a close, Stalin was encouraged by a series of surprising scientific reports regarding oil production in the Soviet Union. Soviet oil explorers had begun discovering large oil reserves thousands of meters deep below the surface of the earth, at levels far below what would be expected according to the theory that oil was a fossil fuel. Stalin was no scientist, but he seized upon the idea that oil might be readily available at deep levels below the surface of the earth, far below where oil explorers generally looked.

Beginning in 1946, Stalin organized a scientific examination into studying every aspect of petroleum, including how it is created, why reserves are formed, and how the oil can best be discovered and extracted. The scope of the project was huge, virtually a Soviet-style Manhattan Project, but one focused specifically on oil.

Ruthlessness defined Stalin's resolve. In gaining power within the Soviet Union, he killed millions through purges and banned millions more to the Gulags in Siberia from which they never returned. During World War II he was willing to take massive civilian casualties to defeat the Nazis. At the end of the war, he had no hesitation to turn on the very Allies he had needed to win that war. Even as the U.S. Manhattan Project began, Stalin took steps to steal our atomic secrets through espionage.

In the 1950s the Soviet Union was considered a poor prospect for oil

discovery. Yet Stalin thought better. If the Soviet Union could obtain a strategic advantage through exploring new theories about oil's availability, what could be better? Stalin was not interested in the pure pursuit of science as much as he was interested in a military and political advantage. He had no doubt that oil was a key resource of strategic importance.

By 1951 Professor Nikolai Kudryavtsev articulated what was to become known as the Russian-Ukrainian theory of deep, abiotic petroleum origins. Essentially, the theory rejected the contention that oil was formed from the remains of ancient plant and animal life that died millions of years ago. According to Kudryavtsev, oil had nothing to do with the unproved concept of a boggy primeval forest rotting into petroleum. The Soviet scientist ridiculed the idea that an ancient primeval morass of plant and animal remains was covered by sedimentary deposits over millions of years, compressed by millions of more years of heat and pressure.

The Soviet theory advanced by Kudryavtsev and dozens of Russian scientists who followed him was that the origin of oil was "a-biotic." In other words, oil did not come from the once-alive "biotic" material of ancient plants and animals. Instead, the Soviet scientists concluded oil should be seen as a primordial material that the earth forms and exudes on a continual basis.

The Soviet theory should have shaken the world in the 1950s. Here Russian scientists were proclaiming that oil required no connection whatsoever with biological agents in order to be formed. Oil was a natural product of the earth itself, manufactured at deep levels where there were no plants or animals. Oil was then pushed upward toward the earth's surface by the intense pressures of the earth's core and the influence of the centrifugal force that the rotation of the earth exerted upon the specific gravity of oil as a fluid substance. Abundant oil could be found if only we drilled deep enough.

Why did this theory not advance beyond the Soviet Union? First, Stalin had no reason to inform his enemies, especially not the Americans or the British. Second, most of the findings of the Soviet scientists were published in Russian, and few American or British scholars of the day read Russian. Besides, we were locked into the mind-set that oil is a fossil

fuel. The Russian alternative theory had to be crackpot simply because it lay so far beyond our Western conventional thinking.

Over the past fifty years Soviet scientists in a wide range of disciplines have published academic articles advancing the theory of deep, abiotic petroleum origins. Several thousands of articles were generated by physicists, chemists, and geologists, all validating and expounding the theory that oil is generated naturally by the earth on a continuous basis. Today the theory is widely accepted by Russian science, even though the theory is largely unheard of in the rest of the world.

Few of the Soviet scientific papers have ever been translated into English. Yet the Soviets took these concepts and found abundant oil deep within the earth, advancing to become one of the world's largest producers of oil. As committed communists, the Soviets had no reason to see that their ideas were equally understood outside Russia. And Stalin had no reason to worry that his scientists had any inclination to do so. Scientists outside Russia were poised to ridicule any theory that offered any alternative to their nearly universal agreement that oil was fossil fuel. Why consider anything else, especially when everybody agreed oil came from ancient forests and decaying dinosaurs?

Why have so few Americans heard the theory that oil is an abiotic product, arising from deep levels within the earth? We should not be surprised. Our mind-set has been that oil is fossil fuel. This was what we have consistently thought since the earliest days, when in 1859 Edwin L. Drake successfully drilled for oil in Titusville, Pennsylvania.

Subsequent generations of Americans have been deeply invested in the idea that we are running out of oil, that our greedy oil companies are intent on making wild profits regardless what social or economic cost they bring to bear on the environment, as they use up with abandon our scarce and dwindling supply of hydrocarbon-based fuel. Any competing idea is so threatening it has to be ridiculed, not examined, lest it might be true. How else could radical environmentalists continue their attack on the oil companies, a pillar in their view of American capitalism at its corrupt worst?

The thought that oil might be naturally produced on a regular basis,

that oil itself might be a renewable resource, is very threatening to those who have invested their minds into believing oil is fossil fuel. The logical consequence of the fossil fuel theory of oil has always been that we will run out of oil. After all, there could only be a finite number of ancient forests available to rot into oil. Ancient forests, even if once plentiful, are a finite resource that by definition will become exhausted after they are fully explored and their oil harvested. The logic of the fossil fuel theory is that inevitably we will run out of oil.

Yet the bet changes instantly if oil is produced by the earth, possibly even today, on a continual basis. Is it possible we might never run out of oil? Could it be that oil is abundant, nearly an inexhaustible resource, if only we drill deep enough? These turn out to be very threatening questions to anyone who has any kind of bias against “big oil.”

Oil is running out. We are nearly at the “end of oil.” What fool would dare doubt this?

THE RUSSIANS FIND OIL IN THE DNIEPER- DONETSK BASIN OF THE UKRAINE

The Dnieper-Donetsk Basin is in the eastern part of Ukraine. Today Ukraine is credited with having 395 million barrels of proven oil reserves, the largest part of which is found in the Dnieper-Donetsk basin.⁴ In the 1950s this area had been abandoned after extensive study as not likely to produce oil. The region's rock had been geologically examined and determined to have “no potential for petroleum production,” according to a Soviet scientific analysis that reported on the region. This study is available in English in large part because the scientific team included a rare American, J. F. Kenney, a Texas oil well driller who was affiliated with the Gas Resources Corporation in Houston.⁵

Specifically, geologists found the area contained no “source rock.” Under the theory that oil is fossil fuel, those searching for petroleum typically look in sedimentary rock configurations. Sedimentary rock is generally softer, more porous earth formed in soft layers as soil deposits accumulate on the earth's surface. *Source rock* is so termed because

geologists logically believe that ancient forests and the fossils of ancient animals such as dinosaurs lay on the ground and became sedimentary rock over thousands and millions of years. Source rocks then are sedimentary rock that contains evidence of oil deposits. The idea is that the oil is “sourced” from these very rocks, almost as if the rocks themselves produced the oil. When geologists examine sedimentary rock configurations and fail to find source rocks, they generally declare the area to be an unlikely prospect for oil exploration. Where there are no source rocks, there are unlikely to be ancient forests that have developed into oil, so the conventional theory goes.

In the early 1990s the Dnieper-Donetsk Basin was reexplored according to the principles of the abiotic theory, looking for oil and gas at great depths within the earth. The area was known to have active, strongly circulating artesian waters. To the geologists, the presence of artesian wells suggested a deep earth structure that permitted fluids to flow up from great depths, through the metamorphic and volcanic rock far below the surface, into the sedimentary layers closer to the surface.

Metamorphic rock is sedimentary rock that has been hardened under great pressure, for example, granite, as opposed to limestone or sandstone. Volcanic rock forms as the molten outflows from volcanoes harden. Volcanic rock generally does not derive from sedimentary or metamorphic rock. According to the abiotic theory, oil arising naturally from within the earth will be trapped in “basement” structures that are capped by the hardened crystals that form the underpinning of volcanic layers. Abiotic explorers expect to drill through the crystalline basements of volcanic rock to find hydrocarbon oil and gas trapped in deep reservoirs below. If fissures exist in the volcanic or metamorphic layers, then abiotic explorers expect that oil will have flowed upward into the sedimentary layers of later geological time.

Some sixty-one wells were drilled in the northern flank of the Dnieper-Donetsk Basin in the early 1990s, of which thirty-seven proved commercially productive, resulting in a successful exploration rate of 57 percent. A series of scientific tests run on the oil discovered confirmed the deep, abiotic theory. Paleontology analyses conducted on the oil

showed microfossil traces of an earlier geological era than the geological era of the rocks where the oil was found. This finding confirmed to the geologists that the oil had migrated upward from deep within the earth, picking up microfossil traces from the sedimentary rock through which the oil passed.

For example, oil found in Permian era rock deposits (251–299 million years ago) contained fossil remnants from the Devonian era (416–359 million years ago) or the Cambrian era (542–488 million years ago). This could not have happened unless the oil trapped in Permian-era rock on its upward progress toward the surface of the earth had first passed through Devonian- and Cambrian-era deposits, picking up biogenic (“fossil”) debris in the process. According to the fossil-fuel theory, oil found in Permian-era source rock would be expected to contain Permian-era fossil remnants.

What the scientists were examining was “micro-photo-fossil” debris in the oil—small or “micro” amounts of biogenic material that evidences photosynthesis, or “life,” as would be evident in the ancient plants and animals, all of which depended on transforming the energy of the sun into living tissue, scientifically known as the process of photosynthesis.

The oil from the Dnieper-Donetsk Basin evidenced a considerable quantity of micro-photo-fossil deposits from many different ancient plants. Still, 70–75 percent of all the ancient spore pollens found in the oil were identified as Proterozoic micro-photo-fossils, regardless of which reservoir rock, depth, or geological age the oil came from. The Proterozoic era began 2.5 billion years ago and ended 543 million years ago.

This finding strongly supported the abiotic theory, because it suggested that all the oil in the basin, regardless where the oil was found in the 1990s trapped below the surface, had passed through the most ancient sedimentary deposits in the area. The living organisms of the Proterozoic era were mostly bacteria and relatively primitive plant structures. The oxygen buildup in the atmosphere that permitted the development of more sophisticated plants and animals did not begin until the middle and end of the Proterozoic era.

The types of ancient forests and primeval animals we imagine rotting

into oil are generally thought to have been formed much later than the Proterozoic era. Dinosaur fossils do not appear until the Mesozoic era, some 245 to 65 million years ago. The oil in the Dnieper-Donetsk Basin may have contained microfossils, but it was not “fossil fuel” in the sense commonly meant.

Reporting in September 2001, J. F. Kenney and his coauthors noted that of the more than fifty commercially successful oil and gas fields in the Dnieper-Donetsk Basin, two were producing oil strictly from the “crystalline basement,” the area defined as below volcanic rock, well out of range of the upper sedimentary rock layers from later geological eras. Surveying all the scientific analyses conducted on the oil from the Dnieper-Donetsk Basin, the authors were strong in their conclusion: “These results, taken either individually or together, confirm the scientific conclusions that the oil and natural gas found both in the Precambrian crystalline basement and the sedimentary cover of the Northern Monoclinial Flank of the Dnieper-Donetsk Basin are of deep, and abiotic, origin.”

So, according to the U.S. Department of Energy’s most recent reports, the Dnieper-Donetsk Basin contains Ukraine’s largest proven oil reserves even though explorers looking for “fossil fuel” had long ago abandoned the area, having failed to look deep enough. Oil had been there all along. Having the correct theories in mind with which to find the oil was the key that had been missing.

2

THOMAS GOLD AND THE DEEP HOT BIOSPHERE

The suggestion that petroleum might have arisen from some transformation of squashed fish or biological detritus is surely the silliest notion to have been entertained by substantial numbers of persons over an extended period of time.

—FRED HOYLE, astronomer, longtime friend and scientific coauthor with Thomas Gold (1982)

WHERE DID THE THEORY that oil is fossil fuel come from in the first place? How critically has the theory been demonstrated and defended by modern science?

These questions are rarely asked. Yet they are legitimate questions that deserve to be rigorously examined.

MIKHAIL V. LOMONOSOV AND FOSSIL FUEL

The theory that oil is fossil fuel traces back to an eighteenth-century Russian natural scientist who, in 1745, became the first professor of chemistry at St. Petersburg's Academy of Science. Lomonosov is regarded as Russia's first scientist of world importance. He was widely educated and worked in astronomy, geophysics, geology, and mineralogy as well as chemistry. A surviving portrait of Lomonosov shows him as middle-aged

and cherublike in his roundness, his beardless visage framed by a fashionable wig. He is shown wearing a stylish shirt with ruffles and a formal jacket, pensively holding a quill pen in his hand as he glances into the distance over his right shoulder, as if looking for his next thought to memorialize on the writing paper at his fingertips. In addition to his scientific achievements, Lomonosov was also known as an artist, poet, and student of Russian history.

The 1757 proceedings of the Imperial Academy of Sciences in St. Petersburg attribute to Lomonosov the conclusion that oil is fossil fuel. One sentence was sufficient to express the theory: "Rock oil originates as tiny bodies of animals buried in the sediments which, under the influence of increased temperature and pressure acting during an unimaginably long period of time, transform into rock oil."¹ That is evidently how the belief that oil is fossil fuel began. At the time Lomonosov stated the premise, the argument seemed reasonable enough to be generally accepted.

Even in the eighteenth century oil was known to contain microbes of a biological nature. From this Lomonosov evidently deduced that oil had been produced by biological processes. Under some leap of imagination, he tied together fossils that are biological remnants generally found beneath the surface of the earth with oil that contains biological remnants and is also found beneath the surface of the earth. Surely oil had to come from fossils, right? How else could oil contain traces of microbiological life? Lomonosov's process of deduction seems no more sophisticated than this leap of imagination and conjecture.

Lomonosov's hypothesis had early critics. An important one was Dmitry Mendeleev, the Russian chemist who in 1896 first arranged the sixty-three known elements into a periodic table based on atomic mass. Mendeleev also studied the origin of petroleum, but he rejected Lomonosov's contention that oil was fossil fuel. Instead, Mendeleev was one of the first to suggest that oil is primordial material that arises from great depths from within the earth. He suggested that oil moves upward toward the surface of the earth along structures he theorized were "deep faults" within the crust of the earth. Mendeleev's observations anticipated the later deep, abiotic theory developed by the Soviets. Still, both

Lomonosov and Mendeleev were making at best theoretical deductions that seemed to them to be reasonable intuitively. Neither postulated any form of proof, other than the power of their personal experiments in thought.

Still, Lomonosov's fossil-fuel theory took hold, probably because the theory made intuitive sense. Petroleum is commonly found to contain fossil spores or pollen. How did this biological material get there? These traces are often categorized as "biomarkers," as if their presence evidenced the conclusion that the oil itself had arisen from biological material. Exactly how ancient forests and dinosaurs decomposed into oil at great pressures under the earth is typically assumed rather than demonstrated or proved in any scientific manner. We are left to imagine a rotting morass that is covered by a millennium of dirt to the point where the resulting subterranean intense pressure cooks the soup. Hundreds of thousands or even millions of years later, the goop transforms into oil. The scientific literature is deficient in demonstrations that anyone actually has produced oil from decayed biological material. Yet that has been overlooked, given the theory's near universal acceptance.

Perhaps the best explanation for the theory's persistence is deceptively simple. We have all seen swamps and can easily imagine the dark-colored slime that accumulates at the bottom of swamps. Crude oil has the same black slimy quality as pond residue, so why not assume that crude oil results from pond residue? Add into the equation the usual assumption that ancient plants and animals must have stewed around and rotted on the floor of some imagined forest primeval. Did the ancient plants and animals somehow become pond residue? Oil and pond slime look and feel alike, but did rotting dinosaurs and pond slime always look the same?

We have been told since we were children that oil is fossil fuel. So why bother questioning what everybody knows to be true?

The problem is that somehow many important questions never get asked. Let's be contrarian and pose a few of the puzzling questions just for fun. How many ancient forests and decaying dinosaurs were there that actually rotted as is usually imagined? Does it matter exactly how the forests and dinosaurs died or precisely where their corpses fell? For

instance, did a whole group of dinosaurs all have to die at once, or was it okay if they died one at a time and were scattered about, one here and one there? Did it take a pile of dinosaurs before they started rotting into oil? Did dinosaurs go to a particular place to die, like we hear elephants do? Or did oil only get going when the supposed great comet hit the earth and killed virtually all of the dinosaurs once and for all?

Then why weren't these ancient debris piles evenly distributed around the world? Why, for instance, did so many ancient forests and dinosaurs die and decompose into oil in what is now the Middle East as compared to Florida? Was the prehistoric Middle East really that different from prehistoric Florida or New Mexico? How about the bottom of the ocean, maybe the North Sea for an example? How did the ancient forests and decaying dinosaurs get that deep under the ocean? What happened?

Let's continue for a minute. Today we unearth plenty of dinosaur bones in Montana. Why don't we find more oil in Montana? Why do we generally not find distinct isolated fossils in coal, with individual ancient animals in complete but singular preserve, a bird here or a fish there? Why instead don't we find great groups of ancient plant and animals all on top of one another in a pile, forming a virtual panorama of fossils filling the entire coal bed?

There is a lot of oil in the Middle East, but we never hear anything about dinosaur bones being discovered in Saudi Arabia. Why not? How about in Iraq or Iran?

Detailed questions such as these are rarely posed and virtually never answered. For most of us, the fossil-fuel theory is more an impressionistic suggestion than a rigorously demonstrated and proven scientific conclusion. Some 260 years after Lomonosov made his first suggestion, we still have little more to go on than the original one sentence observation he made, namely that oil must have come from prehistoric biological debris.

In truth, the fossil-fuel theory is so vague its proponents can easily hide behind ill-defined assumptions and readily fashioned explanations. Just consider, for a moment, the convenient answers available to fossil fuel theorists. Maybe oil did not form in Montana because the subsequent sediment laid on top of those particular piles of ancient debris was

not quite right. Or maybe the ancient debris left lying on the floor of ancient Montana forests was not compressed under sufficient pressure.

Maybe the ancient debris in Florida rotted before it was covered over by sediment. After all, it's pretty humid in Florida. Maybe it was equally humid in Florida during prehistoric times, a million or so years ago. Who knows? That could be the ready explanation for why the dinosaurs that died in ancient Florida rotted there before dead ancient trees had a chance to fall and cover them over. So we don't have so much oil in Florida, not because there weren't any dinosaurs in ancient Florida, but because the temperature and humidity conditions weren't right to get the dinosaur-to-oil transformation process started.

When it comes to the fossil-fuel theory, tons of ground-shifting answers are available to prop up the hypothesis. Maybe in New Mexico there isn't much oil these days because the ancient sediment that covered the ancient debris in New Mexico was not the right type of sediment. So the explanation for ancient New Mexico is a little bit different than the explanation for ancient Florida—in ancient New Mexico the temperature and humidity conditions were right, but the conditions were wrong to have the dinosaurs die in ancient swamps and be buried by ancient trees. After all, it's pretty dry in New Mexico. Maybe it was also dry in New Mexico during the Mesozoic era when dinosaurs abounded.

Argument ground-shifting of this kind commonly results from less-than-rigorous scientific thinking. What was the exact ancient debris needed to form oil? What was the right sediment that had to be deposited on top of the decaying mess, the amount of pressure needed, over how many hundreds of thousands or millions of years? In other words, what is the scientific formula for getting from ancient goop to modern oil? That's what we want to know.

When paleontologists find a pile of ancient bones, we usually have a reasonable explanation—such as the ancient animals were all trapped in the same tar pit. As an aside, we should also stop to ask where the tar pits came from in the first place that trapped the ancient animals. We could almost get into an infinite loop here, like looking from a mirror into a mirror and seeing an endless regression of mirrors reflected back and

forth. Which came first, the ancient tar pits or the dinosaurs that got trapped in them? If the tar pits were first, how did they get there? Did it take hundreds of thousands of years of dinosaurs dying before there were any tar pits around to trap the dinosaurs that came along later?

Somehow, when geologists discover oil, all we get is the assertion that oil is a “fossil fuel,” not a convincing, detailed proof demonstrating exactly how those particular fossils transformed into precisely that oil field. We need to see specified the exact type of sediment required to cover the ancient debris for the fossil-to-oil transformation to take place. Why don't the textbooks show the oil transformation formulas specifying in equation form the amount of pressure that must be applied over what period of time. Where do we find the exact chemical formulae under which ancient leaves and bones became hydrocarbon petroleum? Where is the laboratory experimental proof?

Or maybe we're just nuts to ask these questions. But then if the only response left to the advocates of the fossil-fuel theory is to launch (ad hominem) attacks on anyone who questions the theory, that itself should be a flashing red light signaling the theory is weak.

ENTER THOMAS GOLD

Thomas Gold was a controversial professor of astronomy who taught at Cornell University and died in 2004 at eighty-four years old. In 1998, when he was seventy-eight, he published *The Deep Hot Biosphere: The Myth of Fossil Fuels*, a book that directly challenged the conventional wisdom.² Gold ventured into geology to argue that the Russian-Ukrainian deep, abiotic theory on the origin of oil was right despite being ignored by Western scientists and geologists.

Gold himself was an eccentric character.³ He was born in Vienna in 1920 and studied in Switzerland before going to England to study at Cambridge University shortly before World War II broke out. For a year Gold was held in a British internment camp, because he was suspected of being an enemy spy. When he managed to talk his way out of that predicament, Gold ended up helping develop radar for the British Admi-

rality. From there he landed in the United States, at Harvard. In 1959 he was recruited by Cornell University where he chaired the astronomy department and directed the Center for Radiophysics and Space Research. He had to wait until 1969 to get his doctorate, when Cambridge University finally decided to bestow upon him an honorary degree.

A photograph of Gold in his laboratory at Cornell in 1986, a year before he retired, shows him to be the reasonably normal older-professor type—balding, wearing reasonably styled large-frame eyeglasses, dressed in a suit and a tie, scowling with just the right touch of “prove it to me” toughness in the lines of his face. His laboratory apparatus is framed nicely in the background over his right shoulder.

A 1968 photograph shows Gold with more of an Orson Wells flare. Here a man with a full head of dark hair sits at a table pointing at some kind of experiment; he has fire in his eyes and his mouth looks as if he is about to tell us some strange, startling theory. He looks like an oddball genius who is about to shake us with a new revelation. Behind him, framing his head and shoulders, is a large blown-up photograph of the moon that vividly displays the craters and lines of the moon’s surface. Maybe he’s H. G. Wells rather than Orson Wells, but in this photograph he sure looks like he’s unlocked the secret of the war of the worlds.

Throughout his career, Gold espoused scientific theories that his peers tended to reject. Many of Gold’s arguments proved to be valid despite being initially rejected by a nearly universal majority of more conventional scientific thinkers.

In 1946, when he was a graduate student in astrophysics at Cambridge University, he was intrigued with a problem that had stumped auditory physiologists for years. How did the human ear manage to distinguish so finely the subtleties of musical notes? The conventional scientific wisdom then was a nineteenth-century idea first proposed by the German physicist Hermann von Helmholtz. The accepted theory was that the inner ear functioned as a series of “strings” vibrating at different frequencies. The ear was merely thought to be the rough instrument that took in the noises; it was the brain that distinguished between the tones so that we could identify individual notes and combinations.

Gold disagreed. His work on radar convinced him that the ear as a detecting instrument had to function more finely, truly adding something to distinguish the sounds. Gold believed the ear amplified incoming noise by adding energy to the detected frequencies before the signals were transmitted to the brain. Not until the 1970s did physiologists finally conclude that the inner ear contained a series of fine hairs that did act as amplifiers, exactly as Gold had suggested years earlier.

Then, in 1955, Gold suggested, contrary to conventional wisdom, that the surface of the moon was covered by a fine rock powder. Again he was vindicated, but not until Apollo 11 touched down on the moon in 1969, and the world watched as Neil Armstrong hopped around, kicking up a fine-grain powder of rock as he moved along. Gold was one of the 110 scientists worldwide who received samples of moon soil from the Apollo 11 mission to test.

In 1967 Gold advanced the theory of pulsars by suggesting that pulsars are neutron stars that spin out radio waves as they rotate. The theory was ridiculed by other astronomers until a pulsar was discovered in the Crab Nebula, and it turned out to be a neutron star that spun out radio waves as it rotated.

Not all Gold's scientific insights have been validated. In 1948 he and two fellow graduate students published a steady-state theory of the universe that flew in the face of the currently accepted big-bang theory that the universe was created at a single instant. Gold's steady-state model assumed the universe had no beginning and no end and that matter is being constantly created within the universe as we go along. Today big-bang theorists regard Gold's steady-state model as a brilliant mistake at best. Yet that argument is far from over.

Variouly described as a gadfly or maverick, Gold considered himself a "scientific heretic," and he enjoyed annoying his fellow academicians with his unconventional views. When in 1998, in retirement, he published *The Deep Hot Biosphere*, the scientific community was not surprised that Tommy Gold, as he was known to friends and colleagues, was again taking them on—this time arguing that the theory of fossil fuel was a myth masquerading as a proven scientific hypothesis. The Cornell

community knew Gold as an oddball who refused to take elevators, instead preferring to surprise students and fellow teachers alike by bounding up stairs two at a time. The world knew Gold as a brilliant but unconventional thinker whose opposing views more often than not had a bad habit of proving out right.

Gold's thinking about oil began with his primary discipline, astronomy. As an astronomer, he was aware that hydrocarbons are abundant in the universe. Since the early part of the twentieth-century, spectrographs that analyze wavelengths have permitted astronomers to determine with certainty that carbon is the fourth most abundant element in the universe, right after hydrogen, helium, and oxygen. Furthermore, among planetary bodies, "Carbon is found mostly in compounds with hydrogen—hydrocarbons—which, at different temperatures and pressures, may be gaseous, liquid, or solid. Astronomical techniques have thus produced clear and indisputable evidence that hydrocarbons are major constituents of bodies great and small within our solar system (and beyond)."⁴

In other words, hydrocarbons are not "organic chemicals" resulting from life processes on earth, as is commonly assumed by proponents of the fossil-fuel theory. Rather, hydrogen is a fundamental element readily available in the universe, one that combines with carbon to form hydrocarbons whether life is present or not.

What astronomers have known about the abundance of hydrocarbons in the universe unfortunately has not passed over to geologists who all too often continue to think of hydrocarbons as forming only through the activity of life—either in building life through photosynthesis or when life dies, such as when dinosaurs rot into oil. At his core, Gold was an astronomer. His study of radar during World War II came from his appreciation that astronomers used spectrography to read the optical and radio portions of the electromagnetic spectrum as they worked to identify the chemical composition of various bodies in the sky. This led him to puzzle about the structure of the inner ear, to wonder how we transformed sound vibrations into musical tones. He comprehended that pulsars produce radio waves.

As an astronomer, Gold knew that hydrocarbons were abundant in

the universe, found in countless millions of heavenly bodies where there were no ancient decaying trees or dinosaurs. From this realization, his thinking turned to oil, where he suspected the accepted theories were once again poorly thought out. Gold understood all too well that geologists were not trained as astronomers and that this blind spot could be a fatal flaw when geologists tried to understand the origin of oil.

His observations about himself confirmed that Gold thoroughly understood why he was drawn to this project. "The earth is, after all, a planet, and thus geology should be regarded first and foremost as a subset of planetary science, but that view has been slow to take hold. Because I spent a good part of my working life as an astronomer, I was made aware of the importance and reliability of these observations early on."⁵ Gold's study of astronomy told him that hydrocarbons were abundant in the universe, which meant to him that the earth did not need decaying ancient trees and dinosaurs to make oil. It was that simple. If fossils weren't needed to produce hydrocarbons in outer space, then why were they needed to produce oil on earth?

Astronomers continue to confirm Gold's observations that hydrocarbons are amply available in space. In 1986 scientists had a rare chance to study the makeup of comets when Haley's Comet passed. Several probes flew close enough to obtain detailed scientific readings on the chemical composition of the comet's core. What they found was that about 80 percent of the comet's nucleus was ice; some 15 percent of the remainder was frozen carbon monoxide; the remainder was frozen carbon dioxide, methane, and ammonia.⁶

Methane is a hydrocarbon product. Were there dinosaurs in outer space? No credible scientist yet has come forward to suggest that the methane found in comets was produced as a result of decaying protoplasm. This is the light bulb that went off in astronomer Thomas Gold's mind. As an astronomer, Gold felt it was nonsense to say that decaying ancient trees or dead dinosaurs were the reason we have oil on the earth. If hydrocarbons were in the earth before the dinosaurs, then the earth did not need the dinosaurs to produce oil. That was the insight that drove Thomas Gold to elaborate his theory.

We are going to venture one full paragraph from Gold directly. Even reading the paragraph may take some effort, Gold should be given the opportunity to make the point himself:

It is therefore clear that the occurrence of hydrocarbon molecules within the earth is in no way an anomaly. It would be surprising indeed if the earth had obtained its hydrocarbons only from a source that biology had taken from another carbon-bearing gas—carbon dioxide—which would have been collected from the atmosphere by photo-synthesizing organisms for manufacture into carbohydrates and then somehow reworked by geology into hydrocarbons. All this, while the planetary bodies bereft of surface life would have received their hydrocarbon gifts by purely abiogenic causes. (Remember that carbon is an element, and no processes on earth—other than human-built nuclear reactors—can create it. I am sure there were no big stagnant swamps on Titan or Pluto).⁷

The parenthesis was Gold's own. The more he pondered the fossil-fuel theory, the more he found himself ridiculing the theory.

What made sense to Gold was that hydrocarbons in various forms, including crude oil and methane gas, were fundamental building blocks of earth as it formed and as it has continued to develop over millions of years. Gold fully realized his agreement with the Russians, his proposal (and that of his many Russian colleagues) was that petroleum is "abiogenic and ubiquitous deep in the earth."⁸ In other words, go deep enough into the mantle of the earth, and you will find abundant oil everywhere.

So, according to Gold, the reason we find more oil in the Middle East than in Florida or Montana is because the deep subsurface structure of the Middle East is more sufficiently fractured to allow the oil to flow upward, the natural direction oil should be expected to flow given its specific gravity and the centrifugal force caused by the rotation of the earth. The reason we find oil in sedimentary rock is not that sedimentary rock is the source rock enclosing the rotting ancient forests and dinosaurs, but because sedimentary rock is porous enough for the oil moving toward the surface of the earth to pool into.

But Gold didn't stop here. He turned his attention to the curious phenomenon of ocean vents that were actively pumping gases and fluids into the sea from deep within the earth. Around these vents, marine scientists were discovering a wide variety of living creatures, including simple organisms (such as bacteria) to more advanced organisms (such as tube worms). How could these organisms live in seawater so deep no light could penetrate that far?

What fascinated Gold was this: the fossil-fuel theory had assumed that all life started with photosynthesis, the process by which plants and animals transform sunlight into energy and protoplasm, the cells that make up plants and animals. Life on earth is carbon based. We take in our food the building blocks of carbon compounds that we need to oxidize if we are to build our bodies. In simplified form, the basic chemical transformation of human life is that we breathe in oxygen, the oxygen transforms the carbon food we eat (replacing carbon molecules with oxygen molecules), and we exhale carbon dioxide, in the process retaining carbohydrates.

Granted, what we are presenting here is a great simplification of a very complex process that Gold studied in detail. But the point most relevant here is that, according to Gold, the deep-water living organisms without access to light are still able to transform hydrocarbons into the energy and tissue they need to live and grow. Gold's solution was that these deep-water creatures have learned to draw the carbon they need directly from the output of deep-water vents while drawing the oxygen they need for the transformation from the deep water itself and from the soil and rock nutrients available around them.

All of this is accomplished without light or the process of photosynthesis. "Because we are surface creatures," Gold wrote, "we are inclined to regard an ecosystem based on chemical energy rather than photosynthetic energy as a strange, if wonderful, adaptation of life. We marvel at the ecology of the deep ocean vents as a deft adjustment of surface life in an inhospitable environment. The evidence argues otherwise. Microbes and even animals are thriving at these vents; growth rates are thought to exceed those in even the most productive surface realms."⁹

Thomas Gold embraced the scientific discoveries being made in the

1970s, 1980s, and 1990s that deep realms of the ocean abounded in life that had never seen the light of day. He understood that deep-water vents allow gases and fluids to escape from within the earth's mantle. These gases and fluids provide the hydrocarbon chemicals needed for this life to exist. With this realization, Gold could explain the presence of microbes in petroleum. The microbes live directly off the oil, with no need of photosynthesis to provide them nourishment. Life is not confined to the surface of the planet. The deep earth is itself a biosphere, teeming with living organisms that have never seen the light of day.

Next, Gold deduced that oil, as it travels upward from deep within the earth's mantle, is able to pick up along the way various microbes and bacteria that live in the layers of rock through which the oil passes on its way to the earth's surface. These microbes are adapted to living directly off the hydrocarbons that constitute the oil itself, without need of sunlight or photosynthesis.

So oil could contain evidence of living organisms and still be a completely abiotic substance, one not requiring any form of living agent to be produced. Drawing from the huge microbial biosphere of living organisms that existed deep below the surface, the oil could simply pick up microbes that would be assimilated into the body of the oil. Many of these microbes would continue to live off the oil. With his theory of a deep, hot biosphere, Gold recognized that he was able to "resolve the petroleum paradox," explaining how it was possible for oil to be an abiotic substance that could yet contain strong evidence of biological activity.

DRILLING IN THE SILJAN RING

In 1985 Gold had a chance to test out his theory. The Swedish Parliament granted the State Power Board authority to drill 5 kilometers (3.1 miles) into what was known as the Siljan Ring, a large meteor-impact crater area in what was essentially volcanic rock. Two years earlier Gold had given a speech to the Swedish State Power Board, urging that it drill in the Siljan Ring. Here was his perfect test of the deep, abiotic oil theory. The Siljan Ring contained no sedimentary rock of the type traditional fossil-fuel

geologists believed were good prospects as source rocks containing petroleum. The meteor-impact nature of the Siljan Ring suggested to Gold that the substructure of bedrock below the surface might be sufficiently fractured to allow the upward passage of oil from deep levels within the earth's mantle.

In explaining the project to the Swedes, Gold referenced the deep borehole that the Soviets had drilled on the Kola Peninsula in the far north of European Russia, near the city of Nikel. The Kola Peninsula region resembled the Siljan Ring in that the substructure was volcanic rock with a crystalline basement that trapped oil into reservoirs deep below the surface. After drilling down 11 kilometers (6.8 miles), the Soviets hit methane gas. As Gold explained to the Swedes, "No explanation in terms of a downward seepage of surface biological material"¹⁰ would seem possible in an area like the Kola Peninsula. Finding methane in the Kola Peninsula at 11 kilometers below the surface of the earth appeared to be strong confirmation for Gold's theory.

Drilling at the Siljan Ring began in June 1986 and continued until June 1990. Drilling stopped largely because of funding limitations. The deepest hole drilled prior to the cessation of drilling reached 6.7 kilometers (about 4 miles). Even at this depth, the results indicated that "hydrocarbon gases from methane to penthane—as well as light, largely hydrogen-saturated oils—are indeed present deep in the granitic rock."¹¹ The area of the Siljan Ring selected for drilling had been chosen so as to rule out the possibility that any hydrocarbon products that might be found there had simply seeped down from the thin layer of Paleozoic limestone and sandstone that surrounded the meteor crater.

Granted, the exploration failed to find enough oil or gas to make the project commercially viable. Still, that any hydrocarbon products at all had been found at a level of 4 miles instead of the deeper 6.8 miles that had been drilled at Kola was considered confirmation of the abiogenic theory of petroleum formulation. A depth of 4 miles was still deep enough within the earth to rule out that petroleum found there was the product of fossils, especially when seepage from above had been ruled out. Gold strongly proclaimed that the test had supported "my view that

enormous quantities of hydrocarbons were still streaming up from a primordial source in the deep crust and upper mantle."¹²

Near the end of his life, in 2001, when the paperback version of his book was published, Thomas Gold remained as confident as ever about the validity of his theory.

Since the first publication of this book, in December 1998, I have only become more convinced that petroleum and black coal are not fossil residues that have worked their way down from the surface of the Earth into their subterranean resting places. This widely accepted view of their biogenic origin is, in my view, mistaken, and this book proposes an alternative—namely, that Earth's massive reserves of hydrocarbons are abiogenic, that they were part of the primordial "soup" from which our planet was created, and that to this day they exist in abundance deep within our planet and continue to upwell toward the surface.¹³

Even today, Gold's work on the origin of oil has remained largely unknown to the public. Though he took pains to write in a way that would be accessible to most readers, his book still requires a reasonably sophisticated scientific background, as well as a basic understanding of a range of scientific disciplines, including astronomy, geology, biology, and chemistry. Hopefully the explanation here makes the basics of Gold's theory more easily accessible.

What is at stake is a question important enough that it makes the intellectual effort worthwhile: Is it really possible that oil is a natural product of the earth, one that is abundantly available if we can find commercially viable ways to drill several miles below the surface of the earth? Gold says, "Yes, it is possible." Moreover, he argues that the deep, abiotic theory of petroleum is the only theory that stands up to rigorous analysis.

OIL, AN ORGANIC OR AN INORGANIC CHEMICAL?

Going back some two hundred years, chemistry was divided into two branches: organic and inorganic. The original idea was that chemicals

derived from plants and animals were organic in that they contained some kind of vital force, a “life force” as it were. Inorganic chemicals were those derived from minerals. Like the minerals they came from, inorganic chemicals were considered devoid of life, lacking in the “vital life force” intrinsic to organic chemicals.

Oil was always considered an organic chemical, principally because oil was found to contain living microbes. Because the study of oil was assigned to organic chemistry, the assumption that oil derived from living creatures was reinforced. If oil had been considered an inorganic chemical, no one would have taken seriously the suggestion that oil was produced by decaying ancient trees and dinosaurs.

The distinction between organic and inorganic chemistry did not last long. In 1828 German chemist Friedrich Wohler accidentally synthesized urea from inorganic starting materials.¹⁴ Urine is obviously produced by many animals, including humans. Wohler was trying to make ammonium cyanate from silver cyanate and ammonium chloride. What he got instead was a crystalline material identical to urea, a chemical that can easily be isolated from urine. This result blew up any theory that organic chemicals could only be derived from living organisms. Wohler clearly showed that no mysterious vital force was needed to synthesize organic chemicals. And this result destroyed the traditional basis for distinguishing organic from inorganic chemicals.

Still, scientists continued to study organic chemistry as if the chemicals assigned to that branch of inquiry were somehow different. Today organic chemistry has evolved to study primarily chemicals that contain both carbon and hydrogen. Again, the bias that organic chemistry deals with living things persists. Life on earth is carbon-based. So if we extend the traditional thinking, the chemistry studying hydrocarbon chemicals should logically be organic chemistry. But even with this new classification, the hidden assumption continues that organic chemicals somehow derive from living things. So organic chemistry shifts to study hydrocarbon chemicals without announcing that the “vital force” idea behind organic chemicals has been dropped. This result spills over to the study of oil, a hydrocarbon chemical, reinforcing the idea that oil must derive

from living things such as ancient plants and dinosaurs. Else why would oil be considered an organic chemical? So goes the circular reasoning.

Still, the distinction that organic chemicals derive from living material is now largely abandoned by serious chemists. Compounds produced by biological agents have repeatedly been produced from inanimate materials in laboratories under controlled conditions. Modern chemists understand that organic chemistry studies carbon-hydrogen compounds simply because that is what organic chemistry studies, not because anyone really assumes there is a vital force intrinsic to hydrocarbons.

Yet the myth persists among geologists. Subconsciously the classification of oil as an organic chemical continues to reinforce the fossil-fuel theory. Hydrocarbons are organic chemicals, so they must somehow refer back to living things, else why continue to classify them as organic? Few modern chemists take the time to sort through all the historical associations that have ended up assigning hydrocarbons to organic chemistry. For all practical purposes, modern chemists make no significant deductions from the distinction between chemicals derived from living things and chemicals derived from minerals. Still, the myth of fossil fuels continues as strong as ever.

To attack the fossil-fuel theory directly, all that was needed was for scientists to synthesize from completely inorganic chemicals a form of hydrocarbon fuel in a laboratory under controlled circumstances. This is exactly what happened in 2004, when a group of American scientists did for methane what Friedrich Wohler did for urea.

SCIENTISTS CREATE METHANE IN A LABORATORY

In 2004 a group of scientists decided to test the abiotic theory to see if they could produce a form of hydrocarbon fuel in a laboratory. Henry Scott of Indiana University in South Bend, together with colleagues from Harvard University, the Carnegie Institute in Washington, and the Livermore National Lab, designed an experiment to test Gold's theory. The research team included Dudley Herschbach, a Harvard University research professor of science and recipient of the 1986 Nobel Prize in chemistry.

The research team decided to squeeze together iron oxide, calcium carbonate, and water at temperatures as hot as 500 degrees Celsius and under pressures as high as 11 gigapascals (one gigapascal is equivalent to the pressure of 10,000 atmospheres). Simply put, the scientists were trying to see if iron oxide, calcium carbonate, and water would produce oil if they were combined under pressures and temperatures comparable to those experienced in the earth's upper mantle.¹⁵

To conduct the experiment, the scientists designed a "diamond anvil cell" mechanism consisting of two diamonds, each about three millimeters high (about one-eighth inch). The tips of the diamonds were pointed together, allowing them to compress a small metal plate designed to hold the sample of iron oxide, calcite (the primary component of marble), and water that the scientists wanted to force together. The scientists then conducted a variety of highly accurate spectroscopic analyses on the sample material that resulted. Herschbach explained the diamonds were ideal material for the experiment because, as one of the "hardest substances on earth, they can withstand the tremendous force, and because they're transparent, scientists can use beams of light and X-rays to identify what's inside the cell without pulling the diamonds apart."¹⁶

The basic idea was to smash the iron oxide, calcite, and water together at the types of temperatures and pressures we would expect to see deep within the earth and stand back to see what happened. The diamond mechanism provided a reliable way to take the end product and submit it to spectrographic analysis so its chemical content could be analyzed accurately.

No decaying ancient fossils or dinosaur parts were added to the experimental mix. The goal was not to demonstrate that alchemy was possible, but to prove that a hydrocarbon of the petroleum family could be produced via simple inorganic reactions involving no biological agents whatsoever.

Remarkably, the experiment worked. The scientists found they could easily produce methane, the principal component of natural gas, at temperatures around 500 degrees Celsius and at pressures of 7 gigapascals or greater. The result was stunning, strongly suggesting that Gold was right,

that an abiotic process deep within the earth could produce oil. Inorganic chemicals (iron oxide, calcium carbonate, and water) had been combined to produce an "organic" chemical, methane. So a nonbiological source of hydrocarbons may well exist within the earth's mantle such that a hydrocarbon fuel like methane could be produced through reactions between rock and water without involving any decomposition of living organisms. Laurence Fried of Livermore Laboratory's Chemistry and Minerals Science Directorate summed up the importance of these findings as follows:

The results demonstrate that methane readily forms by the reaction of marble with iron-rich minerals and water under conditions typical in Earth's upper mantle. This suggests there may be untapped methane reserves well below Earth's surface. Our calculations show that methane is thermodynamically stable under conditions typical of Earth's mantle, indicating that such reserves could potentially exist for millions of years.¹⁷

So where is the proof that dead ancient trees and dinosaur corpses can rot into hydrocarbon fuels? Here we will let Thomas Gold have the honor of taking the floor to make the final point: "Nobody has yet synthesized crude oil in the lab from a beaker of algae or ferns."¹⁸

SCIENTISTS DISCOVER DEEP UNDERSEA ECOSYSTEM IN ANTARCTICA

Scientists are also establishing increasing proof for Gold's contention that living organisms abound at a level so deep under the sea that photosynthesis could not possibly be the principle by which they grow.

In 2002 a large section known as the Larsen B Ice Shelf broke free of the Antarctic Peninsula. The shelf collapse revealed a huge previously hidden glacial trough, lying half a mile down on the seafloor and measuring twice the size of Texas. The conditions in the trough were dark, without sunlight, and frigid. The trough below the Larsen B Ice Shelf had been undisturbed for some ten thousand years. Here scientists from the

U.S. Antarctic Program made a startling discovery. An ecosystem thrived here below the Larsen B Ice Shelf, a virtual community of clams and what amounted to a layer of bacterial mats. Eugene Domack of Hamilton College described the finding in *Eos*, the weekly newspaper of the American Geophysical Union: "Seeing these organisms on the ocean floor—it's like lifting the carpet off the floor and finding a layer that you never knew was there."¹⁹

The creatures living deep below the Larsen B Ice Shelf were not using photosynthesis to produce their energy. They couldn't, since no light could penetrate either the ice when the ice shelf was in place, or the water. Even more surprising to the scientists, these extreme creatures were living off methane. The methane, which originated deep within the earth, poured onto the seafloor through underwater vents. This type of ecosystem, described as "cold-seep" or "cold-vent," was first discovered in 1984 off the shore of Monterey, California. Similar finds were subsequently made in the Gulf of Mexico and the Sea of Japan.

The scientists made the discovery by accident. Reviewing a video of the seafloor, the scientists were surprised to notice the clams and bacteria growing around mud volcanoes. The find confirmed the prediction of Thomas Gold that a "deep, hot biosphere" would be found where organisms thrived by drawing energy directly from hydrocarbon sources pouring out of the earth. Hydrocarbons, as he hypothesized, could be found pouring from the earth as a primal material. Here, at the bottom of the sea, we find "extreme creatures" capable of living on methane, without any need of light. So, too, we could expect that bacteria and other microorganisms might well blend into the oil that for them was a source of food.

We should pause here to make an observation about how scientific disciplines work. Geoscientists are just now coming to realize that scores of living organisms can thrive without ever seeing the light of day. Somehow this is a new revelation, even as we proceed into the twenty-first century. Geophysicists should have consulted biologists or medical physicians. Louis Pasteur, working in Paris in the 1860s, established the science of microbiology, proving that infectious diseases are caused by microorganisms living within the human body. Even schoolchildren today

know the basics of the germ theory of disease. Since Pasteur, biologists have studied hundreds of organisms that live within our bodies and feed off our bloodstream or intestines without benefit of photosynthesis.

These insights do not cross over to geologists who observe microbes in oil and deduce that oil must have been produced by decaying living organisms, such as ancient trees and dinosaurs, living creatures that grew by photosynthesis. Clearly, a biologist looking at oil passing through the earth could have drawn on the image of blood moving through the human circulatory system, or waste material moving through our intestines, to conclude that the microbes found within the human body can live off the blood or waste material itself without ever seeing the light of day. Hydrocarbon chemicals, such as oil or methane, attract living organisms that feed off the hydrocarbons themselves. Oil passing through the earth on the way to the surface will attract these very microorganisms as well as more advanced life forms, such as clams at the deep bottom of the sea. Thomas Gold was right. A deep biosphere does exist within the earth, probably all the way to the bedrock of the earth's mantle. Microbes feed off the soil or the nutrients in the deep sea, just as they can adapt to feed upon hydrocarbons when and where hydrocarbons are available.

The fossil-fuel theory, then, is a conventional hypothesis that may not be sustainable in light of scientific evidence to the contrary. If this is the case, we must seriously consider that the deep, abiotic theory of the origin of petroleum gives us a much more solid scientific base on which to proceed. There is considerable precedent in the history of science for understanding how old scientific theories are discarded when new, more robust theories come forward as superior explanations of the phenomena being observed.

THOMAS KUHN AND THE THEORY OF SCIENTIFIC REVOLUTIONS

In 1962 physicist Thomas S. Kuhn published *The Structure of Scientific Revolutions*, a watershed book that changed forever how the question of scientific progress is conceptualized and debated.²⁰ Kuhn's core argument

was that science advances not by the gradual progress of studies that refine major propositions but by revolutionary theories that disrupt and ultimately supersede previous, nearly universally accepted scientific hypotheses that are shown to be inadequate in comparison.

According to Kuhn, accepted scientific theories form a "paradigm," defined as a series of propositions and theories that constitute the scientific theory. Ptolemaic astronomy, for instance, was a paradigm built around the idea that the sun and planets revolved around the Earth. The Copernican Revolution replaced Ptolemaic astronomy with the understanding that the Earth and other planets revolve around the sun. Paradigm shifts, according to Kuhn, involve revolutions in which new, competing theories appear first as heresies and have to fight their way to acceptance against a legion of established opponents who have invested careers as well as their entire adult belief systems in a view of the world that the new theory demands they abandon.

If this discussion sounds familiar to the argument presented here, it should. Essentially, we are arguing that the fossil-fuel theory of the origin of petroleum is an old, established idea that needs to be supplanted by a more adequate explanation, namely the abiotic theory as described by Soviet scientists since the 1950s and by Thomas Gold in the United States. As explained by Kuhn, all revolutions in scientific thinking are painful, especially to the established adherents of the scientific hypothesis that is being supplanted.

Yet paradigm shifts become unavoidable when new theories emerge that more adequately explain puzzles, unexpected results that established theories cannot explain. Thus if fossil-fuel theorists simply ignore the type of contrary scientific evidence we have presented in this chapter, they do so at their own risk. The abiotic theory is on the table, contending for the lead position in the debate, advancing the argument that the fossil-fuel theory cannot explain why methane can be produced from inorganic chemicals in a laboratory or why an active biosphere that has never seen the light of day can thrive deep beneath the Antarctic ice, living off methane that arises into the sea from vents that open into the mantle of the earth.

Listen to how Kuhn explains scientific revolutions:

Political revolutions are inaugurated by a growing sense, often restricted to a segment of the political community, that existing institutions have ceased adequately to meet the problems posed by an environment that they have in part created. In much the same way, scientific revolutions are inaugurated by a growing sense, again often restricted to a narrow subdivision of the scientific community, that an existing paradigm has ceased to function adequately in the exploration of an aspect of nature to which that paradigm itself had previously led the way.²¹

This is why we have focused on the Soviet science of the 1950s and on the work of Thomas Gold. Both sensed that the fossil-fuel theory of petroleum's origin no longer fits the data. Even worse, the fossil-fuel theory is limiting in that we are looking for oil in the wrong places, underestimating the availability of oil because we are locked into a belief that oil will have to run out. We, as authors, have not spent scientific careers locked in the belief that oil comes from decaying plants and dinosaurs. Kuhn would argue that this prequalifies us to argue the opposing point of view. Thomas Gold fancied himself a contrarian, and as an astronomer, he knew hydrocarbons were found on objects in space that never saw a *tyrannosaurus rex* or a *brontosaurus*. The Soviet scientists at the end of World War II had no choice—Russian geologists had already found oil deep within the earth, and Stalin was in no mood to hear that Russia was deficient in source rock.

How long can the fossil-fuel theory last when credible scientific evidence continues to surface that hydrocarbons such as methane may have an abiotic origin? This is not simply a scientific question. As we will see, important political and economic issues will be seen very differently if and when the world begins questioning our long-held prejudice that oil comes from decaying ancient forests and dinosaurs.

In these first two chapters we have strongly suggested that now is the time for the scientific paradigm to shift—oil is not fossil fuel. There is already far too much evidence to the contrary. Next, let's take a close look

at a necessary conclusion of the fossil-fuel hypothesis, namely, that sooner or later we must run out of fuel. Because we reject the fossil-fuel theory, we are also going to reject the idea that running out of oil is a scientific necessity. Traditional scientific thinking about oil has caused us severe economic and political limitations. We want in this book to move forward toward the economics and the politics of an energy policy that is founded on solid scientific grounds, not “junk science” thinking.

3

HUBBERT'S PEAK AND THE RUNNING-OUT-OF- OIL SCARE

The eleven major and one giant oil and gas fields here described have been discovered in a region which had, forty years ago, been condemned as possessing no potential for petroleum production."

—VLADILEN A. KRAYUSHKIN,
chairman of the department of petroleum
exploration, Institute of Geological Sciences,
Ukrainian Academy of Sciences, Kiev (1994)

PREDICTIONS THAT WE ARE running out of oil are not new. The scare began virtually from the first moment we found commercially useful purposes for oil.

We are going to argue here that the running-out-of-oil scare is built into the myth that oil is fossil fuel. Here is the point: there only were so many ancient forests and dinosaurs—there was no endless supply. So when we run through all the oil these decaying ancient residues produced, we're done. Only a finite number of dinosaurs ever lived; so there's a finite amount of oil. Built into the logic of the scientific paradigm that has become the "fossil-fuel theory" is the concept that sooner or later we have to run out. We don't have to find any political conspiracy or bias to explain the fear. That we will run out of oil is a necessary conclusion built into the implicit logic of the fossil-fuel theory itself.

As we will see in this chapter, the abiotic, deep-earth theory has no

such necessary conclusion. If the earth produces oil as a natural substance, then very possibly the earth has never stopped producing oil. In other words, we may never run out of oil. Let's see how the competing logics play out against one another. Remember, the consequences of this debate are both economic and political. If we are inevitably running out of oil, then our industrial society is threatened—unless we develop alternative fuels or conserve oil. Alternative fuels and conservation are the only alternatives allowed if we follow the logic of the paradigm of the fossil-fuel theory to its necessary conclusions. As we shall see, the abiogenic, deep-earth theory permits alternative conclusions that are not doomsdaylike in nature.

HUBBERT'S PEAK

Probably the most famous formulation of the running-out-of-oil scare is known as "Hubbert's Peak."

In 1956 M. King Hubbert, a geophysicist working in the Shell Oil research lab in Houston, Texas, published a graph that predicted U.S. oil production would peak in the 1970s. Hubbert's graph looked like a normal bell-shaped distribution curve—in other words, the graph showed almost no production of oil in the early 1900s, then the curve rises to a top point in the early 1970s, from where it drops off gradually until there is no more U.S. oil production at all by 2050. Because the graph rises on the page like a mountain, the analysis has become known as Hubbert's Peak. The name also stuck because "peak" suggests we will reach a high-point of oil production from which we will inevitably fall back to zero, the same place where we began prior to 1859 and the historic Drake well in Pennsylvania.

Hubbert became famous for his prediction that U.S. oil production would peak in the early 1970s. The problem was that U.S. oil production did not peak as predicted. New oil finds in Alaska and in the Gulf of Mexico actually boosted oil production far beyond any limit envisioned by Hubbert's model. One would have thought that these new finds that proved Hubbert's projections were wrong would also have proved Hub-

bert's assumptions and theory were wrong. But that is not what happened. His supporters have revised, not abandoned, Hubbert's model. Any other conclusion was incomprehensible to the theory's adherents. Believers insist that their revisions are minor corrections and that Hubbert's basic concept is inevitable—U.S. production of oil does not have much longer to go. After all, we are eventually going to run out of fossil fuel, so what difference does it make if we find a few last oil fields. The logic still dictates that we have no option but to run out of oil sooner or later.¹

Even though Hubbert's Peak generated false predictions, his graph continues to be accepted as biblical truth to the adherents of the fossil-fuel theory. Countless books and articles cite Hubbert's Peak as proof that the world is running out of oil. We are reminded of the type of debate that went on among medieval theologians. To win an argument, all a theologian had to prove was that the argument had been made by Aristotle—*Aristotle ipse dixit*, which translates as "Aristotle said it himself." Any theologian who could add *Aristotle ipse dixit* at the end of his argument won the debate, it was about that simple. The same is true today. To prove the world is running out of oil, all a geologist has to do is cite Hubbert's Peak. Everybody is then supposed to throw up their arms in agreement. "We must be running out of oil—just take a look at Hubbert's Peak."

That the Hubbert's Peak argument is circular seems to escape the notice of these adherents. In logic, tautologies are meaningless because they merely state in other words an assumption implicit in the original argument without actually proving anything. Looked at this way, Hubbert's Peak is a tautology, an assumption implicit in the fossil-fuel theory itself, not a separate proof. How do we know this? It's obvious. When actual data counters the predictions of Hubbert's Peak, the predictions are simply revised. Believers act as if they cannot contemplate an alternative explanation, namely, that Hubbert's Peak has to be wrong, because we are not running out of oil. New oil finds are being made worldwide, and today we have more proven oil reserves than ever before. There is no empirical evidence that these trends will ever stop. The world is not running out of oil. That is the alternative hypothesis, the one supporters of Hubbert's Peak never contemplate seriously.

The Hubbert's Peak graph for the United States has been reworked to make the same argument for the world. No matter how much oil we find around the globe, eventually explorers worldwide are bound to find all of it. Remember, there were a finite number of ancient trees and dinosaurs to start with, so there can only be a finite amount of oil worldwide. No matter what the world does, sooner or later we will have drilled for it all, and the planet will simply have no more oil. Unless we stop using oil right now, we are doomed regardless of what we do. Yes, supporters of Hubbert's Peak argue that we should slow down our use of oil. Yet oil conservation just postpones the inevitable. If we cannot find acceptable alternative fuels, then we must remain oil-dependent to the bitter end. The final act of the fossil-fuel play is built into the very statement of the fossil-fuel theory itself. If we remain oil-dependent, as we are today, then we're doomed sooner or later, regardless of how much oil we find in the last chapters. Eventually we have to face the end of this dismal drama. Eventually there will be no more oil, the theory inevitably concludes.

Looking closely, we see that Hubbert's original suggestion was basically a back-of-the-envelope drawing. The scientific literature is filled with articles by oil experts and economists who argue whether the statistical evidence agrees or disagrees with Hubbert. Even how Hubbert developed his famous graph is unclear. Consider this explanation given by Kenneth Deffeyes, who worked at Shell Oil's research lab in 1958, when Hubbert was there as the "star of the show":

The numerical methods that Hubbert used to make his predictions are not crystal clear. Today, 44 years later, my guess is that Hubbert, like everybody else, reached his conclusion first and then searched for raw data and methods to support his conclusion. (Despite sharing roughly 100 lunches and several long discussions with Hubbert, I never had the guts to cross-examine him about the earliest roots of his prediction. Lunch discussions were more cheerful when Hubbert chose the topic.) Guessing the answer first and then searching for supporting arguments is a common scientific procedure; it is not cheating. Hubbert had a message; he packaged his message in a format that he found convincing.²

And this statement was by one of Hubbert's closest associates and strongest supporters. Do we need further proof that Hubbert was jamming the data into his graph with his mind set to "prove" what he already believed, namely, that the world is running out of oil. Yet, evidently, nobody at Shell Oil dared to argue with him. As Deffeyes explains: "His belligerence during technical arguments gave rise to a saying around the lab, 'That Hubbert is a bastard, but at least he's our bastard.' Luckily I got off to a good start with Hubbert; he remained a good friend for the rest of his life."³

Yet today, despite the arguments made to the contrary, Hubbert's Peak is almost universally accepted among petroleum geologists as a true and established law. Usually, after stating as a truism that the United States has no choice but to increase its dependency on foreign oil, professional oil experts turn to lament that in a short period of time, maybe two hundred years, we will have exhausted what nature took millions of years to create. Consider this statement in the thirty-year update of the famous 1972 MIT study entitled *Limits to Growth*, a generally pessimistic evaluation that world economies are outgrowing available resources:

Optimists and pessimists differ by a few decades in the timing of its [oil's] production peak. But there is substantial consensus that petroleum is the most limited of the important fossil fuels, and its global production will reach a maximum sometime during the first half of this century.⁴

The 1972 *Limits to Growth* edition predicted that we would exhaust oil reserves by 2003. That didn't happen. Countless dire predictions have turned out to be wrong. Still, the fossil-fuel adherents of the Hubbert's Peak logic insist the day will come.

Simply put, oil is typically considered a nonrenewable energy source. Moreover, we are blamed for an irresponsible burning of fossil fuels. Consider this observation from an analyst who is convinced our burning of oil contributes to global warming:

Nature took about a million years to lay down the amount of fossil fuel that we now burn worldwide every year—and in doing so it seems that

we are causing rapid change of the Earth's climate. Such a level of exploitation is clearly not in balance, not harmonious and not sustainable.⁵

Another pessimist is the noted oil exploration geologist Colin J. Campbell, founder of the international Association for the Study of Peak Oil and Gas (www.peakoil.net). Campbell notes the extraordinary advance of human beings since "the fossil-fueled heat-engine was developed into the internal combustion engine," an invention that "transformed the world during the short span of a single century."⁶ Looking back over the two million years since humanlike creatures first appeared on the face of the earth, Campbell laments the short period of time we have left to enjoy a civilization based on petroleum:

Now, as the twenty-first century dawns, we face the onset of the natural decline of the premier fuel that made all this possible, and we do so without the sight of a substitute energy that comes close to matching the utility, convenience and low cost of oil and gas. It remains to be seen if we will be the only species in over 500 million years of recorded history to evolve backward, from complexity to simplicity. Don't hold your breath, but there is little time left to adjust, as we have about as much oil left as we have used so far. Our challenge is to maintain demand in pace with or below the depletion rate. The first step in that direction is to determine what the depletion rate is, and to inform ourselves better about the resources with which nature has bestowed us.⁷

Peak oil statements fill today's literature on oil. The only real change is that believers have to constantly project further into the future the doomsday date when oil runs out. Somehow worldwide oil reserves have a nasty habit of increasing despite the projections. Still, believers continue to revere Hubbert as their prophet while they portray his peak-production graph as established science: "Just as no one will ever repeal the Second Law of Thermodynamics, almost nobody can seriously challenge M. King Hubbert, although heroic efforts have been made."⁸ Citing various statistical arguments, these authors declare that worldwide oil

and gas reserves will be depleted or exhausted in a profile similar to Hubbert's Peak, with a probability of 95 percent or more. Our future, according to these analysts, is dire indeed:

Consumers of any petroleum product or of natural gas around 2035 will really be a dying species, somewhat like the entire class of reptiles and amphibians in Europe, whose species numbers are decreasing about 4 percent every year. This will also be the likely annual falloff or "average decay rate" for oil production and use through about 2008–35. Preceding this, there may well be sharper annual declines (perhaps well above 6 percent) for several years, slowing as the curve flows outward and downward. Fast decay rates will then return near the end. By around 2035, oil production will be down by around 75 percent from today's levels of about 78 million barrels/day, and through unstoppable demographic growth the per capita consumption of oil, oil products and natural gas will have fallen by about 95 percent, and at least 65 percent for gas, compared with today. Compressed into less time than from when the first Concord thundered into the stratosphere, burning up to nine liters per second of kerosene, to 2003, the wipeout of cheap oil and gas will be dramatically rapid.⁹

What choices do we have but to slow down our burning of hydrocarbon fuels and to scale back our economies and lifestyles? If the peak-production theorists are to be believed, we must now all start demanding new legislation that mandates fossil-fuel alternatives. The only solution left is government control, since consumers and markets obviously cannot solve the problem on their own. We are surely going to burn our way back to the Stone Age, unless Big Brother steps in to clamp down on the fossil-fuel abusers (namely us), aided and abetted by the big oil companies that greedily gobble up windfall profits as we proceed merrily along the inevitable spiral downward.

What happens when we get to 2035 and we still have plenty of oil? Will the peak-production theorists simply revise their models to show that we are still running out of oil, but maybe the date will be 2050? 2075? Locked into a tautology, the fossil-fuel advocates cannot be expected to

break free from their preconceived notions, no matter how much evidence is produced to the contrary. As Kenneth Deffeyes, the longtime friend of M. King Hubbert, readily admitted, the peak-production theory began as a preconception in Hubbert's mind. The famous "peak graph" was devised subsequently, created by jamming the available data into an easy-to-understand math picture that could more easily be presented to the public.

Reading book after book predicting gloom and doom, we are left with the conclusion that the fossil-fuel advocates are locked into the type of thinking best characterized by Thomas Robert Malthus, whose famous 1789 essay predicted that population would ultimately outstrip our ability to produce food, resulting in a series of crises such as war and famine, which in turn would cut back populations to more manageable levels. Malthus proposed this as a mathematical law that governed and restricted population growth. Since population growth proceeds at a geometric rate (i.e., 2, 4, 8, 16, etc.) and food production proceeds at an arithmetic rate (i.e., 1, 2, 3, 4, 5, etc.) there was no way the success of population growth could not result ultimately in disaster to those very populations that had managed so successfully to grow.

Malthus is famous not because his theory was right but because human experience proved him wrong. Malthus failed to anticipate adequately the human genius for adaptation, invention, and technological advancement. Populations have grown widely beyond all the limits Malthus thought possible. Yet we have somehow avoided all the disastrous consequences he envisioned as necessary. His doom-and-gloom analysis proved alarmist in retrospect.

Still, Malthusian analysis persists today. In his famous four-volume compendium of important mathematical writings through history, James R. Newman included a selection from the treatise entitled "Mathematics of Population and Food," by Malthus. Introducing the selection, Newman observed astutely that Malthusian reasoning still had an audience: "For a time in the nineteenth century, as new lands and resources were developed, the Malthusian doctrine fell into disfavor. Today, with the world's population sharply rising and with a scarcity of new frontiers, the truth of his basic assertion is again very much in vogue."¹⁰

When we discuss the issues of the “greenhouse effect,” global warming, and climate change in the next two chapters, we will have more reason to agree that Malthusian-like thinkers continue predicting even today that human behavior contains the seeds of our own destruction. Today’s conventional mind-set regarding oil locks into the fundamental premise that, since oil is fossil fuel, we are bound to run out. There is no alternative. After all, there never was an infinite supply of rotting trees or dinosaur corpses.

The problem with this doomsday analysis is that, worldwide, we are now sitting on more proven petroleum reserves than ever before, despite the increasing rate at which we are consuming petroleum products. Moreover, new and gigantic oil fields are being discovered at an increasing rate in places the fossil-fuel theory would never have predicted as possible. Let’s examine the evidence and see if it doesn’t sound a lot more like the deep, abiotic theory is the more appropriate model.

KAZAKHSTAN

If you have heard about Kazakhstan and know where it is, you are probably ahead of most Americans. After the terrorist attacks of 9-11 and the U.S. war against the Taliban, most Americans know something about Afghanistan. Yet there are several countries whose names end in *stan*, about which Americans know very little. The ending *stan* essentially means “state,” so Afghanistan is the state of the Afghan people. This area of the world has a tribal history that continues today to dominate the politics and social structure of the region. Kazakhstan is one of the stans that received its independence after the breakup of the Soviet Union.

Kazakhstan is a mountainous area about four times the size of Texas. It is bordered by Russia to the north, China to the east, the Caspian Sea to the west, and a bunch more stans to the South—Turkmenistan, Uzbekistan, and Kyrgyzstan to be specific. The country is 47 percent Muslim and 44 percent Russian Orthodox. Kazakhstan is interesting here because it turns out the country has a lot of oil, something very few outside Russia expected, at least until the country gained its independence.

In 2000 oil was discovered in what is today Kazakhstan's largest known oil reserve, at an area named Kashagan, just off the coast in the Caspian Sea. The Kashagan oil field poses many difficulties. Extracting the oil requires sophisticated offshore drilling technology. Moreover, the oil field is in very shallow waters that are difficult to reach; in winter, the area freezes and shipping requires icebreaker ships to clear the way. Moreover, the oil field contains a vast amount of poisonous hydrogen sulfide gas under extremely high pressure. The oil lies at a depth of 13,000 to 16,500 feet (4,000 to 5,000 meters, or about 3 miles deep). The good part about the Kazakhstan oil field is that it is enormous.

Current estimates are that the Kashagan oil field holds thirty-eight billion barrels of oil. This would make the find the second largest oil field in the world, nearly twice the size of all the North Sea oil fields put together.¹¹

Kazakhstan's second largest oil field was discovered in 1979, at Tengiz, in the western part of the country. In 2001 additional exploration at the Tengiz site upped estimates of total reserves from an earlier estimate of eight billion barrels to a current estimate of around nineteen billion barrels.¹² Reserve estimates in 2004 were again increased to a total of twenty-five billion barrels. Add to the list a giant oil field at Karachaganak in the western part of the country, a 1979 discovery that is proving to be one of the largest natural gas reserves in the world.

Much of Kazakhstan is unexplored. Still, we have to ask the question: Should we be finding this much newly discovered oil and natural gas if the assumptions of the Hubbert Peak are correct? Kazakhstan contains some two hundred known oil and gas fields, and petroleum exploration within the republic is by no means complete. The politics of Kazakhstan are best defined by corruption; bribes to government officials have been essential to get anywhere to explore for oil or natural gas in the country. Yet what seems to be emerging is an understanding that beneath Kazakhstan is a huge reserve of oil and natural gas, a reserve that was completely unknown to Hubbert when he predicted in 1956 that oil production would peak very soon.

The Kazakhstan experience seems to indicate that our proven re-

serves of oil worldwide are increasing. Yet if you are locked into the fossil-fuel model, new finds of oil reserves in Kazakhstan cannot be expected to shake your view of oil. After all, no matter how much oil we continue to find, oil is still fossil fuel, and eventually we will have to find it all. Since there were only a finite number of ancient trees and dinosaurs, we must be getting close to the end. How much more could we possibly find?

If Kazakhstan is such a good prospect, maybe we should pay a little more attention to the other stans. How about Turkmenistan? Turkmenistan also borders the Caspian Sea, and everybody who looks for oil in the Caspian Sea seems to find oil. Then there's Uzbekistan, which shares the Aral Sea region with Kazakhstan. Oil prospecting around the Aral Sea has turned out to be a good deal for Kazakhstan, maybe it would work out for Uzbekistan as well.

IRAN

We all know about Iran. The clerics ruling Iran who have been exporting terror since their 1979 revolution are now pursuing a clandestine weapons program. The mullahs are dangerous, and they have a huge quantity of oil lying under their soil. Even more interesting, Iran is another country where estimates of oil and natural gas reserves continue to go up.

Since 2002 estimates of proven oil reserves in Iran have increased dramatically. In 2003 Iran's oil reserves were estimated at 90 billion barrels; in January 2004 the number went up to 125.8 billion barrels, an estimate that lasted only lasted seven months. In July 2004 new oil discoveries were announced in Iran, and the reserve estimate increased to 132 billion barrels.¹³ Only Saudi Arabia, with an estimated 260 billion barrels of oil reserves, holds more than Iran.

In February 2004 a Japanese consortium announced a deal with Iran to explore the Azadegan oil field, which was first discovered in 1999. Azadegan, in southwest Iran, near the border with Iraq, is already recognized as Iran's largest oil discovery in thirty years. Current estimates are that Azadegan contains 26 billion barrels of oil reserves, but that number is probably low, given the determination of the Japanese that more oil can

be found there.¹⁴ The Azadegan oil field is considered to be geologically complex, and the likelihood is that the reserve estimate will increase, perhaps dramatically, as the Japanese more fully develop the find.

In 2004 Iran announced that oil had been discovered in the Aran and Bidgol regions in central Iran. Previously, most Iranian oil had been found in the south, especially in the Caspian Sea area. Encouraged by these finds, the National Iranian Oil Company (NIOC) declared its goal to find every oil and gas field in the country. To accomplish this goal, Iran identified fifty-one new exploratory blocks, which were then put out to international bid. Eskandar Bavarian, a senior NIOC adviser, boasted that Iran was looking forward to the discovery of 500 million barrels of recoverable oil as well as an additional 84 billion cubic meters of natural gas.¹⁵

Looking at Iraq, Kuwait, Iran, Kazakhstan, and Saudi Arabia, one can almost imagine the whole region sits atop an enormous underground ocean of oil and natural gas. Again, we pose the question. If the Hubbert's Peak model is correct, why do we continue to make so many new finds of enormous oil and natural gas reserves in the Middle East?

Still, not to worry. Diehard adherents of the fossil-fuel theory will not be dissuaded, no matter how many new oil and natural gas fields are found. Regardless of how high the worldwide proven oil and natural gas reserves grows, the foregone conclusion remains the same—sooner or later we will find it all and use it all and have nothing left. Then the Hubbert's Peak model will certainly prove right. No one cares if the model is wrong by fifty or a hundred years or two hundred years? What difference does it make? The result remains the same.

The one possibility that advocates of the Hubbert's Peak model cannot consider is that the supply of oil and natural gas may be so vast that we will never run out.

THE DRAMATIC INCREASE IN OFFSHORE OIL DRILLING

After the success of the North Sea oil project developed by the British, oil explorers began to turn increasing attention to offshore drilling as an attractive prospect. By the 1980s oil prospectors had begun exploring what

the U.S. Department of Energy initially defined as "deep waters," namely any offshore well beyond thirteen hundred feet. Today, aided by 3-D seismic imaging that helps detect oil reserves below the ocean floor, "ultra-deep" wells are being drilled under as much as ten thousand feet of water (approximately two miles down).¹⁶

Ultradeep drilling that begins at two miles below sea level has several important ramifications when it comes to exploring the theory of fossil fuel. First, by going through that much ocean, ultradeep offshore wells get a lot closer to the mantle of the earth without having to drill through dirt. Granted, there are a lot of technical problems to solve in running a rig that doesn't start boring into soil until the drill first gets two miles down. Yet the two miles of water permit the drilling to start at depths below those where conventional wells generally stop.

Besides, how did the ancient forests and dinosaurs get that far down and below the ocean floor? Granted, the earth has made a lot of changes since the Mesozoic era. But do the fossil-fuel theorists really have the evidence to argue that offshore areas two miles or more below the surface of today's ocean surface were ever above ground where ancient forests could grow and dinosaurs could roam?

Offshore drilling is one of the fastest growing emerging sectors in the oil industry worldwide. In the time period 1999–2003, one major industry database listed a total of 81 deepwater discoveries of oil. In 2003 alone, 57 new deepwater discoveries were announced. Now the database lists 185 deepwater discoveries slated for development between 2004 and 2008, estimated to yield forty billion barrels of oil reserves.¹⁷ Additionally, the 2005 database listed for the first time ultradeep projects, noting that 27 ultradeep oil wells were slated for exploration between 2004 and 2008, with an anticipated yield of five billion barrels of oil.

Moreover, the deep and ultradeep oil exploration businesses are both drawing new competitors and significant new investment worldwide. In 2004 some twenty-four operators were involved in producing deepwater fields, with an expected sixteen additional competitors expected to enter the field over the next five years. Twenty years ago deepwater drilling was only getting started. Today companies are investing annually as

much as \$20.9 billion on floating production systems and fixed-platform facilities, with another \$35 billion being scheduled for subsea structures needed for underwater drilling.

Offshore drilling is yet in its infancy, still waging war against determined environmental enemies. Until the past few years, however, an implicit assumption of all oil exploration was that oil would be found beneath ground—after all, ancient forests and dinosaurs required terra firma, so why look anywhere except below the ground we stand on today.

Yes, we are sure the argument will be attempted that some land currently submerged was above sea level in prehistoric times. Yet with some 70 percent of the world's geography currently under the water, we might reasonably assume that prospecting for oil and natural gas will bear surprisingly important results.

We might especially assume this if we think for a moment from the deep, abiotic model. If oil produced within the mantle of the earth seeps upward naturally, why not assume the deep sea throughout might have fissure substructures that would facilitate oil reserves under their crystalline basements below? Today we are finding oil at deep levels below ground. Why not develop the technology to go farther? Perhaps submerged platforms might today enable us to start looking for oil where the ocean floor is already many thousands of feet deep.

THE EUGENE ISLAND BLOCK 330 FIELD—EVIDENCE OF OIL AS A RENEWABLE RESOURCE?

In 1999 the *Wall Street Journal* published a surprising article about an offshore oil field in the Gulf of Mexico off the coast of Louisiana. The well, known as Eugene Island 330, began producing in September 1972. Production had peaked out at fifteen thousand barrels a day; by 1989 the production was down to four thousand barrels a day. Everything was proceeding as projected. Then suddenly, as noted by the *Wall Street Journal*, production jumped to thirteen thousand barrels a day. Reserves that had been pegged at sixty million barrels were now estimated at more than four hundred million barrels.

Journal staff reporter Christopher Cooper summed up the mystery:

All of which has led some scientists to a radical theory: Eugene Island is rapidly refilling itself, perhaps from some continuous source miles below the Earth's surface. That, they say, raises the tantalizing possibility that oil may not be the limited resource it is assumed to be.

"It kind of blew me away," says Jean Whelan, a geochemist and senior researcher from the Woods Hole Oceanographic Institution in Massachusetts. Connected to Woods Hole since 1973, Dr. Whelan says she considered herself a traditional thinker until she encountered the phenomenon in the Gulf of Mexico. Now, she says, "I believe there is a huge system of oil just migrating" deep underground.

Conventional wisdom says the world's supply of oil is finite, and that it was deposited in horizontal reservoirs near the surface in a process that took millions of years. Since the economies of entire countries ride on the fundamental notion that oil reserves are exhaustible, any contrary evidence "would change the way people see the game, turn the world upside down," says Daniel Yergin, a petroleum futurist and industry consultant in Cambridge, Mass. "Oil and renewable resource are not words that often appear in the same sentence."¹⁸

Eugene Island 330 proved to be a highly successful well, pumping more than a billion barrels of oil, despite the controversy that geologists struggled to understand. The Woods Hole Oceanographic Institution finally concluded that Eugene Island 330 did "support the possibility that reservoirs are being replenished by current migration of oil and gas from deeper depths." What was also clear was that the oil replenishing the original came from "source rock: of an earlier geological era, the Jurassic–Early Cretaceous era, not the Pleistocene era, which characterized the sedimentary rock from which the original oil flowed."¹⁹

The Woods Hole Oceanographic Institution concluded that oil flow from Eugene Island 330 was better characterized as "steady state" rather than a "fixed resource." The institution commented that the phenomenon of replenishing wells was being witnessed not only in the deep

waters drilling in the Gulf of Mexico but also in oil-producing areas as diverse as the North Sea, the Niger Delta, the Mahakam Delta in Indonesia, the Trinidad Basin, the Taiwan Basin, and the Alaskan North Slope.

A geological report published on the Eugene Island Block 330 field confirmed that the area of the well was defined by a complex network of faults. The report also contained a highly technical explanation that oil from deep levels within the earth did move up along fault lines ("significant vertical migration," as the report termed the flow) to replenish the top reservoir as the initial oil was drilled out. These results were noted to be consistent with other scientists who had concluded that "most Gulf of Mexico oils originated 2,438 to 3,350 meters (8,000 to 11,000 feet) deeper than their reservoirs, from source beds 5 to 9 million years older than their reservoirs."²⁰

Reading the technical reports, it appears that the geologists explained the phenomenon by reasoning that a second reservoir of oil lay underneath the originally discovered reservoir of oil. But analyzing the microbiological evidence in the oil, they concluded only that the lower lying oil was still fossil fuel, although of an earlier geological epoch.

What was not considered was the possibility that both reservoirs of oil had been filled, not with fossil fuel, but with abiotic fuel that came from very deep layers within the earth and moved upward along fault lines, very possibly originating from deep mantle depths within the earth. As we noted earlier, the microbiological evidence contained in the oil could simply be residue the oil accumulated on the way up, as microbes from the surrounding soil moved into the oil and continued to derive nourishment from the oil.

THE RUSSIANS HELP THE VIETNAMESE TO FIND DEEP, BASEMENT OIL OFFSHORE

In 1981 the Russians teamed up with the Vietnamese to form a joint venture oil company named Vietsovpetro (PetroVietnam). Together they headed into the South China Sea off Vietnam and drilled deep wells into the crystalline basement structure of the sea bottom.

As a result, seven production oil fields were discovered, the largest of which is known as White Tiger, which is on the continental shelf of Vietnam. The main reserve of the White Tiger oil field is "concentrated in fractured granite basement that is unique in the world oil and gas production practice."²¹ Western oil companies expect to find oil only in sedimentary rock; generally Western oil companies refuse to drill unless they find source rock suggesting the sedimentary rock contains oil reserves. That the Soviets and the Vietnamese have found oil in granite structures is revolutionary, unless, of course, you think from the perspective of the deep, abiotic theory.

From the granite basement offshore Vietnam, the White Tiger oil field produces almost 280,000 barrels of oil a day. A second oil field, known as Black Lion, currently produces 80,000 barrels of oil per day, but within three years PetroVietnam expects to increase that output to 200,000 barrels per day.²²

The White Tiger oil field is about five thousand meters (roughly 3 miles) deep, four thousand meters (about 2.5 miles) of which is fractured granite basement. How can the fossil-fuel theory explain finding oil at these deep levels in granite rock? The Russians and the Vietnamese have discovered huge reservoirs of oil offshore, where no one would have looked before. Maybe we should consider abandoning the idea that oil can only be found in sedimentary rock. How many continental shelves (or sea bottoms farther out) might possibly have deep-fracture underground structures into which abiotic oil may have seeped to form ready reservoirs? Right now, we don't know. Perhaps we should investigate it more.

THE RUSSIANS CHALLENGE SAUDI ARABIA IN OIL PRODUCTION

How do we explain this? Maybe there were a lot more Russian dinosaurs than anyone ever knew about. Or maybe the Russians are getting a lot farther by pursuing their abiotic theory than we are with our fossil-fuel mind-set.

In 2004 Russia produced approximately 9.27 million barrels a day of

oil, whereas Saudi Arabia, the world's largest producer of oil, produced around 10.4 million barrels a day.²³ From March to May 2004, Russian crude oil production actually topped that of Saudi Arabia. Among non-OPEC nations, Russia is the number-two producer. And don't forget, in the 1950s few fossil-fuel theorists considered Russia to be a good prospect for oil exploration at all.

As the surge in Russian oil production was noticed worldwide, Yuri Shafranik, the head of the Russian Union of Oil and Gas Producers, stated that Russia had almost reached its maximum level of production. That statement should have reassured peak-production theorists, at least until he added the qualification that Russia's oil production could rise if world prices continued to rise.²⁴ How could the Western world ever be certain any estimates given by the Russians of their proven reserves would be accurate and not simply politically motivated? Who knows how much oil the Russians have actually found?

ESTIMATES OF WORLDWIDE PROVEN OIL AND NATURAL GAS RESERVES INCREASE

If we are running out of oil, why are worldwide oil reserves today at historically high levels? The truth is that we have never had as much oil and natural gas in proven reserves worldwide than we have right now.

Let's look at the facts. According to the Energy Information Administration of the U.S. Department of Energy, worldwide proven reserves of crude oil in 2005 total 1.28 trillion barrels.²⁵ That is an enormous supply of crude oil proven reserves. Since 1980 the trend line has been directly up. Again, look at the figures. In 1980 the worldwide proven oil reserves were 645 billion barrels; in 1985, 670 billion barrels; in 1990, 1 trillion barrels; in 1995, 999 billion barrels; and in 2005, 1.28 trillion barrels. The data represents virtually an unbroken progression of increasing numbers over the last quarter century.

The same upward trend holds true for worldwide proven reserves of natural gas. Here is how the Energy Information Administration of the U.S. Department of Energy defined the situation:

Since the mid-1970s, world natural gas reserves have generally trended upward each year. In 2004, worldwide reserve estimates increased for the ninth consecutive year. As of January 1, 2004, proved world natural gas reserves, as reported by Oil & Gas Journal, were estimated at 6,076 trillion cubic feet—575 trillion cubic feet (10 percent) more than the estimate for 2003.²⁶

Despite these statistics, scholars and the U.S. government continue to generate “peak” tables under the assumption that eventually we will find all the oil and natural gas, so we will have to run out sometime, even if the date when the graph goes to zero has to keep being pushed back. Yet the truth is that we keep finding more oil and natural gas. We are now counting natural gas reserves in measures of zillions of cubic feet. Whoever thought we would be counting reserves of anything valuable in zillions? Yet this data does not shake the shared mind-set of the fossil-fuel and peak-production theorists.

At some point, we have to seriously entertain the possibility that the core assumptions are wrong, even though we have been told since we were children that we are running out of oil. Maybe the earth does have an available supply of oil and natural gas that is dramatically more abundant than we ever dared imagine. Possibly the earth may continue to manufacture oil and natural gas on a never-ending basis, such that the oil flowing to the surface never stops. Fossil-fuel theory leads logically to peak-production conclusions, and those assumptions are very hard to shake, even in the face of overwhelming data to the contrary.

Let's try to get a handle on just what having oil at over 1 trillion barrels of worldwide proven reserves means. In 2004 the world used approximately 82 million barrels of oil each day. This translates into approximately 30 billion barrels of oil used worldwide each year. Alarmists misrepresent these numbers into a scare. They reason if we are using about 3 percent of the worldwide proven oil reserves each year, then in 30 years we will run out of oil. Why is this reasoning wrong?

First, the worldwide reserve estimate is not a fixed number. Moreover, net worldwide oil reserves are increasing, even after we subtract for

increasing consumption. Look at the numbers. Since 2000 worldwide proven oil reserves have increased at an annual rate of approximately 1.25 percent. Worldwide proven reserves have continued to increase after factoring in the increasing demand. Since 2000, worldwide use of oil has increased about 2.5 percent annually. So the reality is that newly found oil had to increase approximately 3.75 percent annually to show a net increase of 1.25 percent per year, after factoring in that demand had increased 2.25 percent. Otherwise, if use of oil had increased at a rate greater than our rate of finding oil, overall worldwide totals of proven oil reserves should have decreased, which they did not. So what the numbers indicate is that we are finding more oil all the time, more than enough to outstrip increasing demand. Why won't this trend continue?

Alarmists cannot get their thinking around the reality that we are finding more oil all the time. Nor do they acknowledge that their running-out-of-oil predictions have always proven wrong. The history of the Hubbert's Peak analysis is that proponents have to constantly revise their projections outward, always extending to later dates (and then later dates again) their estimates of the year in which the world will finally run out of oil. That year has never come, and we argue here that it never will.

There are so many predictions that we will run out of oil, it is hard to select the best example. In a televised speech on April 18, 1977, President Jimmy Carter addressed the nation about energy. His pessimism was characteristic: "The world now uses about 60 million barrels of oil a day and demand increases each year about 5 percent. This means that just to stay even we need the production of a new Texas every year, an Alaskan North Slope every nine months, or a new Saudi Arabia every three years. Obviously, this cannot continue."²⁷ He added: "World consumption of oil is still going up. If it were possible to keep it rising during the 1970s and 1980s by 5 percent a year as it has in the past, we could use up all the proven reserves of oil in the entire world by the end of the next decade."

But Carter was wrong. We did not run out of oil in the 1970s or 1980s. If anything, we have more oil than ever. Yet he could only see a grim future: "Each new inventory of world oil reserves has been more disturbing than the last. World oil production can probably keep going up for an-

other six or eight years. But some time in the 1980s it can't go up much more. Demand will overtake production. We have no choice about that."

Despite Carter's prediction, demand did not overtake production in the 1980s. That point has still not been reached. The evidence of available proven reserves suggests we are still nowhere near the point of dire disaster Carter saw as imminent in 1977, almost thirty years ago.

We probably have not yet found the world's largest oil reserve. If Thomas Gold is right, the earth's mantle may contain more oil than we can ever imagine. What Kazakhstan and Iran prove is that the more we explore previously unexplored areas, even with traditional methods and conventional thinking, the more oil we find. What if our thinking embraced the deep, abiotic model? We might find that we can discover more oil than perhaps even our expanding worldwide markets could absorb.

Still, peak production theorists will put up a stiff fight to maintain their position, regardless of available evidence to the contrary. Oil geologist Colin Campbell, for instance, argues that world oil reserves are more like 853 million barrels, not 1.28 trillion barrels. Why the discrepancy? Campbell argues that many countries inflate their oil reserves to position themselves to get higher production quotas from the Organization of Petroleum Exporting Countries (OPEC). Moreover, Campbell maintains that about half of all known reserves have already been consumed and that future discoveries will not keep pace with demand.²⁸

As Campbell sees the world, we have already burned through some 944 million barrels of oil. We only have "realistic" proven reserves of 853 million barrels, and only about 142 million barrels remain to be discovered. He expects world oil production to peak as soon as 2006, and that from there we will simply exhaust all oil available until we have no more left anywhere. Why Campbell believes we have only a limited number of barrels of oil yet to discover goes unexplained, unless we were simply to expect that conclusion as logically necessary rather than empirically proved. As his critics assert, Campbell's fault may be that he does not adequately support his claims and assertions with convincing empirical evidence.²⁹ How could he? We have only just begun to explore the earth for oil, at least according to the deep, abiotic theory.

The numbers tell a different story. As we noted at the start of this chapter, despite increased worldwide usage, we have never had oil and natural gas reserves so huge. The risk we face is not that we will run out of oil, but that if we maintain current exploration levels, we may end up with a worldwide glut of oil.

IS SAUDI ARABIA RUNNING OUT OF OIL?

As we noted earlier, Saudi Arabia has proven reserves of 260 million barrels and is currently the world's leading exporter of oil. Still, in 2005, Matthew Simmons, the head of a Houston-based investment bank that works heavily in the oil industry, argued that the Saudi oil industry was about to enter a sudden and irreversible decline. Why? Because the Saudis are lying about their reserves, their wells are underproducing, and pretty soon even the Saudis will be out of oil.

Simmons establishes his argument by reviewing approximately two hundred technical reports detailing the production activities at Saudi oil wells and production facilities. He concludes the Saudi oil industry is a mature industry, whose "peak production" has already been reached. Here's how Simmons summarizes his study of the technical reports:

Collectively, these reports map out a lengthy paper trail documenting the growing severity of the problems and challenges affecting all of Saudi Arabia's major fields. Reading this paper trail in chronological order poignantly reveals how these problems have mushroomed in complexity over the last three decades. During this period, erratic production patterns not only drained an ever-growing amount of Saudi Arabia's proven, commercially recoverable oil reserves, but also, perhaps, diminished through over-production the extent to which these reservoirs can be produced without resorting to down-hole pumps.³⁰

Simmons believes the day is almost over when the Saudis can pour more water into the giant Saudi oil fields in order to boost production. He believes the Saudis are lying, afraid to admit to the world that the oil

in their giant fields is being pumped dry and that their exploration efforts to find more oil are failing. He publishes graphs showing that production in the eight Saudi "super-giant" oil fields is diminishing.³¹ Not surprising, each of the graphs looks just like a Hubbert's Peak graph—each oil field starts out slow, builds to a high point, then levels off to near nothing—the classic bell-shaped curve that was characteristic to Hubbard's first drawing of the concept in 1956.

Simmons's thinking focuses on the importance that giant oil fields play in delivering the world's oil supply. "The 116 fields that produce over 100,000 barrels per day provided 47 percent of the oil used worldwide in 2000. The 4,000+ smaller fields contributed 53 percent."³² Simmons buys fully into the peak-production logic of the fossil-fuel theory. All giant oil fields are bound to run dry. He writes:

The litany of excellent case studies presented in the remainder of this chapter amply illustrates the grim fact that all giant oil fields ultimately peak. Once peaking occurs, most soon experience sharp production declines. The rate of decline obviously varies according to the volumes each field was producing when it peaked, along with various other factors. But despite all the variances that can be observed, the commonality among giant oil fields is unmistakable. They do deplete. And at some point on every field's depletion curve, hydrocarbon output begins to decline as encroaching water and gas simply crowd out the oil.³³

Simmons argues this despite producing a table that shows a near doubling of world oil reserves between 1973 and 2000. According to data compiled from BP's statistical review of world energy, Simmons shows that worldwide oil reserves in 1973 were just over 600 trillion barrels; yet in 2003 the table shows worldwide oil reserves at just under 1.2 trillion barrels.³⁴ If all the world's giant wells are depleting to zero, why do oil reserves continue to increase? Nowhere in the book does Simmons suggest we have a lot of oil yet to discover. His entire tone is that we have already discovered most of the oil and natural gas that exists and that we are rapidly depleting the giant fields that the world's oil supply depends upon.

The production-peak theorists seem locked into what logicians call the fallacy of composition. The mistake is made when we reason fallaciously from the properties of the parts to the property of the whole itself. "A particularly flagrant example would be to argue that since every part of a certain machine is light in weight, the machine 'as a whole' is light in weight."³⁵ Because individual oil fields deplete as they are pumped does not mean the oil supply of the world is diminishing as a consequence.

We have shown in this chapter that new, unexpected discoveries of oil are being made constantly. If we apply the principles of the deep, abiotic theory of petroleum's origin, we should expect to find even more oil at depths rarely explored. Proving that we have found all the oil there is to find is almost a logical impossibility—unless, of course, there was some way we could know for sure how much there was to find. The abiotic theory suggests our whole concept of oil's supply might change if only we explored for oil at deeper levels.

What about the evidence that oil fields might replenish or that below reservoirs, close to the earth's surface, there may be deeper, more extensive reservoirs that were the source of the oil initially found above them? We simply have not investigated where the oil comes from because we have assumed all reservoirs are the residue of decaying ancient forests and dinosaurs, so they must have been deposited just where those ancient fossils first fell. Why bother looking below or asking where the oil came from? There was nothing below, and the oil came from ancient detritus, so goes the fossil-fuel theory.

The fossil-fuel theory assumes we already know everything there is to know about oil. So most available oil has been found and pretty soon it will all be gone. The abiotic theory assumes we have not even begun to develop the right questions, let alone answer them. Moreover, if the abiotic theory is correct, the earth generates oil on a constant basis. There may never be a reason to stop looking for it, no matter how many giant wells we deplete in the process.

PART 2

OF OIL

4

THE GLOBAL-WARMING HOAX

Yet in spite of the clear evidence available all around us, there are many who still do not believe that Global Warming is a problem at all.

—AL GORE,
Beacon Theater, New York, January 12, 2004

EVEN IF OIL WERE infinitely available, environmentalists would still have a problem with our using it freely. Why? Global warming. Environmentalists are convinced that our burning of fossil fuels is warming up the earth. We are creating a “greenhouse effect” with the result that the climate is going to change with disastrous results.

Once again we are going to dare to ask some tough questions and to examine the evidence. If you have guessed that we are going to argue that global warming makes about as much sense as the fossil-fuel theory, you’re right. Environmentalists would like us to make their conclusions set in stone, maybe as firmly rooted as the fossil-fuel theory has become. The goal is to condition everyone’s mind so that as soon as you hear *oil*, *natural gas*, or some other supposedly evil term, such as *gasoline*, you immediately think of it in terms of global warming and hear alarm bells in your head.

Look at the success conventional wisdom has had with the term *fossil fuel*. Right now when you say fossil fuel, everybody knows you mean oil, natural gas, gasoline, or their by-products, and you think immediately that we are soon going to exhaust the earth's finite resources. You're conditioned to think in that way without having to explain the logic or translate the terms. Environmentalists are looking forward to the day when we all equally agree that human activity is causing the planet to get warmer. Once this becomes an undisputed axiom, their social and political agenda will follow without objection.

Of course, the only reason we are going to question the global-warming assumptions is because we are right-wing reactionaries—at least that is how environmentalists react whenever their assumptions are challenged. Or that we've been paid millions by the oil companies to spread their lies—that's what the political Left believes, regardless what we say. Al Gore suggests we should look at the evidence. We are going to do that, but our suspicion is that the global-warming theory may have some difficulty sustaining itself under critical analysis. Still, we don't expect an appeal to rationality will win us any favors in the court of public opinion, where environmentalists want everyone to believe they alone are the only ones on the planet who care about life.

We will return to politics at the end of this chapter, where we will suggest that a primary reason the radical environmentalists care about global warming is because they have an underlying economic and political agenda. As we will see, the theme of global warming has come to have important economic and political implications. We are going to argue that global warming is one of the major political themes of the anti-oil forces that are gaining strength on the political Left. The environmentalists have joined with the political Left to push ahead their radical agenda. That agenda is not only anti-oil, it is also anti-industry, judging from what the radical environmentalists do, not just what they say.

WHAT IS THE GREENHOUSE EFFECT?

We can keep the science to a minimum if we concentrate on a few impor-

tant concepts. The greenhouse effect begins with an understanding of the basics of how the earth absorbs sunlight.

First, the sun's energy radiates to the earth in a variety of ways. About a third of this energy is absorbed directly into the earth, another third is reflected back into space (largely by clouds), and the remaining third is absorbed by the atmosphere itself. If the earth and the atmosphere were only capable of absorbing solar energy and not releasing it, the earth would eventually burn away. Thus much of the solar energy absorbed by the earth is eventually emitted back into space in the form of thermal or infrared radiation.

Anyone who has spent any time in a desert knows that the area cools off dramatically at night, even in summer. Yes, the nighttime cooling of the desert intensifies because the earth at night is radiating energy back to the sky, something that occurs even though we never see the infrared rays going back into space. Because desert skies are generally cloudless, the nighttime cooling effect is more apparent than in cities, which are typically built in more humid settings where the nighttime clouds themselves trap and reflect back some of the escaping infrared waves.

Now let's focus on the atmosphere. The majority of the atmosphere is made up of nitrogen (78 percent) and oxygen (21 percent). Because nitrogen and oxygen are both two-atom molecules, they are bound so tightly together they cannot absorb sunlight. For this reason, nitrogen and oxygen, which together make up approximately 99 percent of the atmosphere, are not part of the greenhouse effect. The analysis of the greenhouse effect tends to concentrate on carbon dioxide, a chemical that makes up less than one-tenth of 1 percent of the atmosphere (0.1 percent).

Carbon dioxide is a three-atom molecule, which is bound together loosely enough that it can absorb sunlight. The sunlight absorbed in a carbon-dioxide molecule causes the molecule to vibrate. The vibrating carbon-dioxide molecule in turn radiates heat, which is identified by environmentalists as the primary culprit in the greenhouse effect. When we burn fossil fuels, we increase the amount of carbon dioxide being emitted into the atmosphere. If the greenhouse effect were a purely natural

process that involved no human activity, then the environmentalists would have nothing to complain about. Maybe we could lament the problem, but we couldn't blame it on ourselves.

So environmentalists argue that we burn gasoline in our cars, for instance, and as a result we increase the amount of carbon dioxide in the air. The carbon dioxide absorbs sunlight and as a result emits heat. With more carbon dioxide in the air as a direct result of human activity, the earth warms up. The process is called a "greenhouse effect" because the environmentalists see additional carbon dioxide in the atmosphere as producing a filter that intensifies the heating effect of the sun, much as the glass of a greenhouse produces a like effect. Environmentalists use the term *greenhouse effect* as a code word for global warming, the result that they see as harmful.

We should note that when the term *greenhouse effect* is nothing new. When the idea of the greenhouse effect was first introduced in the 1800s, the term was not considered negative. If all the sun's energy were reflected back by the clouds or lost through the infrared rays reemitted by the earth back into space, then the earth would be about 60 degrees Fahrenheit colder than it is. The atmosphere naturally acts like a blanket that keeps all the sun's warmth from escaping back into space. We depend on our atmosphere to trap sunlight so it can radiate heat, and we need the clouds to bounce back to earth some of the escaping infrared rays being sent back into space, especially at night. If the atmosphere did not function like a blanket, or create a greenhouse effect, a much colder earth could probably not grow the plants that animals, like us, rely on for food.

Now let's examine the carbon dioxide in the air, because carbon dioxide is the environmentalist's culprit chemical. Carbon dioxide is a very small percentage of the atmosphere, as we have noted, less than one-tenth of one percentage. The accusatory rhetoric of the environmentalists is that we are throwing tons of carbon dioxide into the air. Their charge makes it sound as if we are pouring a huge quantity of a noxious chemical into the air simply by burning fossil fuels. So how much more carbon dioxide are we throwing into the air?

This is the first problem the environmental argument encounters.

The incremental addition of carbon dioxide to the atmosphere attributable to human activity is remarkably small. The carbon dioxide in the air is measured in terms of carbon "petagrams." One petagram equals one billion metric tons. So the atmosphere is said to contain some 730 petagrams of carbon (PgC), or 730 billion metric tons. The net annual addition of carbon dioxide contributed to the air by human activity is estimated to be 3 PgC, an increase of only about four-tenths of 1 percent (0.4 percent).

We are talking about a miniscule percentage of the total atmosphere here. Carbon dioxide itself only constitutes 1 percent of the atmosphere. Human beings burning hydrocarbon fuels increase the carbon dioxide by only 0.4 percent. So the annual increment of carbon dioxide we are concerned about constitutes a miniscule .0004 percent of the atmosphere, four one-thousands of 1 percent. All the dire effects environmentalists attribute to human activity would have to be the direct causal result of this very small contribution we make to the total atmosphere every year by burning petroleum products and throwing a small amount of additional carbon dioxide into the air.

To make the argument work, extreme environmentalists virtually have to identify carbon dioxide itself as a harmful chemical. This is absurd when we realize that plants need carbon dioxide to survive. Human beings breathe in oxygen and exhale carbon dioxide. Plants are just the reverse. Plants absorb carbon dioxide and throw out oxygen. This is another reason why plants and human beings are so compatible. Just because carbon dioxide is something human beings exhale doesn't mean carbon dioxide is a noxious chemical to other living things on the earth. Plants love carbon dioxide. Carbon dioxide is not a noxious chemical; plants and human beings both depend upon it for life. Environmentalists have to make an impossible stretch to argue that carbon dioxide is an intrinsically harmful chemical. Still, environmentalists push legislators to include such definitions in global-warming laws.

When we realize that plants take in carbon dioxide in the process of photosynthesis, we have an obvious solution to any supposed problems resulting from the greenhouse effect. Why not just to plant more trees.

Environmentalists generally favor planting trees, unless of course the suggestion is raised in this context. With more trees and plants on the surface of the earth, the net addition of carbon dioxide to the air resulting from human activity could be reduced significantly. As noted by the climate specialist John Christy:

Each year the nonhuman world (forests, oceans, etc) releases about 210 PgC to the atmosphere but in turn absorbs about 213 PgC. What this means is that human activity actually produces about 6.3 PgC each year, because the natural world is pulling about 3 more PgC out than it is putting in. There is very strong evidence to show that the plant world (which includes agricultural production) is thriving as a result of this additional CO₂ (carbon dioxide) and is helping to remove half the portion humans are producing.¹

So if we are throwing more carbon dioxide into the air, let's just grow more food and plant more trees. The additional green life on the earth will need more carbon dioxide to thrive. Christy continues:

Is increasing CO₂ a harmful pollutant? The answer is absolutely no. In simple terms, CO₂ is the lifeblood of the planet. The green world we see around us would disappear if not for atmospheric CO₂. Plant life largely evolved at a time when the atmospheric CO₂ concentration was many times what it is today. We are, from the plants' point of view, putting more of their food into the air, and they are gobbling it up. If plants (and animals that like plants) could vote to offer awards, producers of CO₂ would win in a landslide. So the increasing of CO₂ does not pose a toxic risk to the planet. Efforts to designate CO₂ a pollutant by the U.S. government have not considered the plants' point of view.²

Thinking through the argument, we realize that environmentalists are relying on us to project our own human reactions onto the earth, assuming that the earth as a whole reacts the way we react as human beings. We exhale carbon dioxide out of our bodies. Plants demand carbon

dioxide. What may be seen as noxious to us as human beings is seen by plants as the air they must breathe. If environmentalists wanted to be fair and not merely political, we could start worrying that thriving plants may take too much carbon dioxide out of the air. Would removing carbon dioxide from the atmosphere bring on global cooling? Yet environmentalists never raise this question.

We should also be careful to clearly distinguish the global-warming argument from the argument about a growing hole in the ozone. The issues are distinct. Ozone depletion has been linked to chlorofluorocarbons compounds and halon compounds, the types of chemicals that are typically used in industrial solvents, refrigeration, and air-conditioning systems and as aerosol propellants. Halons are also used as fire suppressants. Ozone depletion has not been linked to having a greater quantity of carbon dioxide in the air. Some may argue that the ozone depletion contributes to global warming. Even if that were true, we would not solve the problem of ozone depletion by burning fewer hydrocarbons. The burning of fossil fuels does not release into the air chlorofluorocarbons or halon compounds, the types of chemicals identified as the culprits causing holes in the ozone.

The most rabid environmentalists must wish they could hitch their wagon on a chemical other than carbon dioxide. Too bad that burning hydrocarbon fuels doesn't throw into the air something that is truly obnoxious to human life and to plant life, maybe even carbon monoxide. In the final analysis, carbon dioxide is beneficial to life.

But at this point the environmentalists shift the argument. The real problem evidently is not that human activity increases the amount of carbon dioxide in the air per se but that the increase in carbon dioxide generates more heat. So let's test this link. Is the earth warming up because of human activity?

ARE HUMANS HEATING UP THE EARTH?

An assertion the environmentalists want to translate into a truism is the presumption that the earth is heating up because we humans burn too

many fossil fuels. Our industrial machine, the cars we drive, the structure of our suburbs, the affluence of our lifestyle—all these are dependent on petroleum. So if the earth is heating up, we're to blame. "The earth is warming up and it's our fault" is the mantra that environmentalists want to make an axiom, and "everybody knows that . . ." type of statement. Yet before we just roll over and quit, let's examine the proposition to see whether it is valid or just another example of junk science.

The idea that chemicals in the atmosphere could cause the earth to heat up traces back to another old idea, one first proposed by the Swedish chemist Svante Arrhenius. At the end of the nineteenth century scientists were debating why the ice age had ended in prehistoric times. In 1896 Arrhenius wrote a paper that examined the effect of carbonic acid in the atmosphere on the temperature of earth.³ In the early 1900s his attention turned to carbon dioxide. Arrhenius became convinced that the ice age existed because the earth at that time had significantly less carbon dioxide in the atmosphere.

Greenhouse-effect theories begin around that time, when Arrhenius and his colleagues began to speculate that the coal being burned to fuel the Industrial Revolution would throw more carbon dioxide into the air, causing the temperature of the earth to heat up considerably.⁴ Arrhenius was not alarmed. He figured that at the current rate industry was then burning coal, it would take three thousand years for carbon dioxide to rise sufficiently in the atmosphere to cause any real problems.

At any rate, the global warming idea took hold, as well as the suggestion that human beings burning fuel could heat up the earth. We have already established that carbon dioxide makes up a very small percentage of the atmosphere. We have shown that burning petroleum products contributes very little additional carbon dioxide to the atmosphere. We have suggested that growing more plants might itself be enough to absorb the carbon dioxide we contribute to the atmosphere. Now let's question whether or not the earth is in a warming cycle that can be attributed to human activity.

The analysis of historical data involves one of the most difficult applications in statistics. "Time series analysis," to use the technical term, is

complicated because you are always trying to identify trends in data points created over time, and you want ultimately to attribute any identified trend to a cause. From the statistician's point of view, we first have to ask whether the trend in temperature observations over time permits us to conclude reliably that the world is warming.

The first problem with time series analysis is to identify the appropriate time period for the analysis. For instance, when a mutual fund claims to be the top performer in its category over the last five years, we can always question if that was a correct or meaningful time period to select for analysis. Maybe if we had looked at the same mutual fund over a six-year period, instead of a five-year period, the mutual fund turned out to be one of the poorer performers in its category.

Arrhenius and his nineteenth-century colleagues were right to wonder why the ice age happened. What we generally think of as the ice age is scientifically identified by geologists as the Pleistocene era, beginning some 1.8 million years ago and ending just 8,000 years ago. Most of us know that glaciers covered most of Europe and North America. The Great Lakes were supposedly dug out by North American glaciers of the great ice age. Mammoths wandered North America, and Neanderthals resided in Europe.

Perhaps the most appropriate time interval for analysis does stretch back to the ice age. Looked at objectively, the intense cold of then and the relatively moderate temperatures of today are distinct enough to be considered as statistically significant differences. What statisticians look for are differences that disprove hypothesis. A minor variation is not enough to be statistically significant. By statistically significant we mean a difference that lies outside the expected variation, outside what is defined as a standard deviation.

Besides, accurate temperature readings are relatively modern inventions; we do not have accurate temperature readings going back hundreds of years, unless we use reasonably unreliable historical human reports or try to impute temperature from other observations such as measuring tree rings as a gauge of temperature.

Has the earth warmed up since the ice age? Yes. Is the earth warming

up now because we are burning gasoline in our automobiles? In truth, that's a much more difficult question to answer with a reasonable degree of scientific certainty.

Yes, we can see a significant difference between the cold needed to produce glaciers over most of the northern world during the ice age versus world temperatures today, when the ice cap is confined predominantly to the global poles. But are we sure a warm winter this year means the earth is getting hotter? Does a cold, snowy winter next year mean we are headed back to an ice age? Which reading is the aberration? These are much more difficult questions. Any variation we experience might be just that—a variation, but not an aberration—in other words, an observation that differs from the true underlying pattern but not a determinative reading we ought to rely upon.

Let's take a look at the swings between glacial cold periods and interglacial warm periods experienced during the Pleistocene epoch, stretching back some 1.8 million years and ending only 8,000 years ago. We will focus on the last part of that cycle, where there are more than enough major fluctuations in temperature to make the point.

Around 130,000 years ago, the earth was going through a warm period between glacial periods. Geologists have termed this time the Eemian interglacial stage. They have studied the climate during the Eemian interglacial stage by examining ice core samples bored out of the Greenland ice cap. The earth's climate then was very much as it is today, maybe a little moister in certain regions. During the Eemian interglacial stage, there were several sudden but brief cold spells. Geologists estimate that ending the Eemian interglacial warm period took around 400 years.

At any rate, around 110,000 years ago, the earth became colder and drier—drier because when the earth cools dramatically, less water evaporates from the oceans to fall back as rain. Even in areas not covered by ice, the aridity caused forests to die, giving way to grasslands that require less water to survive. As the cold reached its low point around 70,000 years ago, much of the grasslands worldwide retreated and gave way to deserts. By this time much of Europe and Canada were buried deep under thick ice sheets.⁵

Then, around 60,000 to 55,000 years ago, the world began to warm. The ice melted, and the world entered a new interglacial period. This ended around 30,000 years ago, when the world went back into a deep freeze. Deserts again expanded and the ice sheets expanded. This period is known as the Late Glacial Cold Stage, sometimes called the Upper Pleniglacial. Pleniglacial clearly signifies what was going on—the world was literally “full of glaciers.”

The ice covering the world reached its maximum point around 21,000 years ago, entering what has been called the Last Glacial Maximum. Now deserts and semidesert land occupied huge areas of all the continents as the forests world died and fell back. Glaciers and deserts covered the relatively treeless world during this time. We are now very possibly in the interglacial period coming out of this last great ice age. So within the Pleistocene epoch there have been several distinct periods when the cold and glaciers advanced, with the cold periods punctuated by the intervening warmer interglacial periods.

Looked at from this perspective, we can argue that the global temperature trends we are experiencing today need to be analyzed not over the last 100 years but stretching back to when this interglacial warming period began, some 21,000 years ago. Minor temperature fluctuations observed today pale in comparison with the trend of extreme cold as the last glacial period ended to the relatively warm conditions we experience today. We have observed swings between glacial and interglacial periods observed for the earth over the last 1.8 million years. Unless this trend has for some reason come to an end, we should expect the earth to begin cooling as we prepare to enter the next ice age.

A joke is circulating on the Internet involving a retired geologist who sent a friend and colleague a note from Mount Rainer. The note read: “Watch out, Al Gore. The glaciers will get you!” The point was appended to a report documenting that the best-measured glacier in North America, the Nisqually on Mount Rainer, has been growing since 1931. If the greenhouse-effect ecologists are right, we should burn more carbon dioxide into the air, hoping that perhaps we can hold back the next ice age. If the global warming the environmentalists attribute to the burning of

fossil fuels is true, maybe we should burn even more gasoline in our cars to put off the day when the ice begins to return.

Why did the earth warm up since the ice age? Clearly the answer cannot be that human beings burned too many petroleum products, unless someone wants to suggest that the campfires of cavemen made the last great glaciers recede. Stretching back 1.8 million years, a lot of glaciers came and went before human beings ever walked the face of the earth.

Scientists debate whether the cause of the swings between glacial and interglacial ice ages involves a change in the earth's orbit around the sun or possibly a change in the intensity of the sun itself. All we can surmise is that the cause had to require a major system shift. Even if the cause was carbon dioxide, something greater than human beings had to be involved. When human beings weren't around to remove carbon dioxide from the atmosphere or to put more carbon dioxide into the atmosphere, the earth still hung in the pendulum somewhere between ice ages and warming spells. At any rate, the fluctuations of temperature we are experiencing today may be relatively minor, certainly not of the magnitude to constitute statistical significance, especially if we are headed toward a glacial period.

Also, huge forces must be necessary to cause the earth to go through such dramatic changes as to go from ice age to warming period and back again. Even if human beings detonated all the nuclear weapons in the world over a single city, the impact on the earth's rotation or orbit would be minimal.

Remember, humans tend to exaggerate their own importance. The distance to the center of the earth is approximately four thousand miles. No practical project has ever been devised to drill that deep, let alone to survive the pressures and heat we would encounter there. How do we know that the earth does not generate hydrocarbons below or within the mantle on a constant basis? We don't. We really have only a limited appreciation of the forces at the center of the earth. Yet we project a theory based on the concept of limited fossil fuels, and we are confident in our own knowledge, even though we haven't tested any competing theories empirically.

The point is that we tend to exaggerate our importance, to be so con-

fidant in our theories, even when our knowledge is admittedly limited. So, too, we project that we are the cause of global warming. Again, we generally do not appreciate the magnitude of the issue nor the limits of our understanding. The distance from the earth to the sun is ninety-three million miles, yet the sun heats us up fairly intensely as is. Energy generated by human beings pales in comparison. Moreover, the number of years involved to see real changes in temperature trends may well number in the thousands or hundreds of thousands of years. Human beings have no experience of time frames this long; we even have difficulty imagining such long time periods, except in a fairly cursory or intellectual way. We live on earth, yet we know very little about the deep ocean, and we have had almost no direct experience with the inner core of our own planet.

The environmentalists have the causal argument exactly reversed. Human activity has expanded because the earth in the current interglacial period has gotten warmer. But the earth has not gotten warmer because of human activity. We humans may be no more than a blip on the radar screen of a much more powerful trend that began tens of thousands of years ago, when the last glacial period began to come to an end. The earth would most likely continue to warm, with or without human beings, until the next glacial period begins and the earth starts cooling off once again. This has been the geological record over the last 1.8 million years. Human beings would not have thrived had the earth itself not begun warming, independent of any cause exerted by human beings or our activity.

Human beings have a hard time appreciating that what we do may actually be of minor importance, or possibly no importance at all, at least in geological terms, or in comparison to the scope of the true magnitude of power exerted by forces that impact the earth or our solar system. Remember, some 70 percent of the earth is occupied by oceans and sea water. Human beings, despite numbering today some six and a half billion people, probably occupy only 10 percent of the world's surface. Still, we think of ourselves as crowded in cities like New York or Tokyo, and we imagine that we are a blight on the earth simply because there are so many of us.

Let's conduct some additional thought experiments to get the impact

of human beings into perspective. For instance, if all six and a half billion people came into North America and began jumping up and down at the same time, would that change the rotation or the orbit of the earth? Hardly. It took a magnitude 9.0 earthquake that struck off Sumatra in December 2004 to cause a vertical displacement of enough water and earth debris to produce a slight variation in the earth's rotation, measured as shortening the twenty-four-hour rotation of the earth by a miniscule amount. In other words, the earthquake of that huge magnitude decreased the length of the day by 2.68 microseconds by causing the earth to spin ever so slightly faster.⁶

Environmentalists develop computer models to project the effect of so-called greenhouse gases on global warming. Depending upon which model we reference, projections indicate that, at current rates of burning petroleum products, we can expect a warming of the earth of as much as ten degrees over the next one hundred years. The problem with these computer models is that the earth is not a controlled laboratory setting. The earth is a very complex system that has multiple ways of adjusting.

Yes, in a laboratory, if more carbon dioxide is added to a given volume of air, the temperature will rise above previous levels when the air is heated. How the earth will deal with increased carbon dioxide is not as predictable. What if there are more trees planted? What if the added carbon dioxide causes fewer clouds to be created? With fewer clouds, more infrared radiation will escape from the surface of the earth, and the net effect might be cooling rather than warming.

But what if the world is getting warmer? We don't really want to move into a new ice age, do we? If the earth is warming, why don't we all just put on some sunglasses and head to the beach? What's the problem?

You may have guessed it. To respond, the environmentalists shift ground once again. The problem, they say now, is not the global warming per se, but that global warming causes climate shifts that are detrimental to life or to the balance of the earth or to some other natural state.

The environmentalists, to win their argument, have a chain of deductions to prove. First, they must prove that human beings contribute enough carbon dioxide into the air to produce a statistically significant

larger amount of net carbon dioxide in the air, beyond what we might correct by simply planting more trees. Then they must prove that more carbon dioxide in the air will cause statistically significant global warming, not just minor variations in a trend that is really better defined as interglacial and seen over thousands of years. Next they must prove that global warming will cause climate changes, and then that the resulting climate changes will in some way be harmful. Otherwise, what's wrong with burning fossil fuels?

According to environmentalists, there is plenty wrong. Remember, environmentalists are working toward a moral conclusion: namely, that it's wrong to burn fossil fuels at the current rate. The corollary is a political argument: namely, the fault rests with modern industrial society, and the worst offenders are Americans because we burn more fossil fuels than proportionately belong to us, all as a consequence of our lavish, selfish, materialistic lifestyle.

IS THE CLIMATE REALLY CHANGING?

No less an expert than former President Bill Clinton has jumped into the battle. Evidently, he buys hook, line, and sinker into the theory that human activity burning fossil fuels has caused global warming, which will cause climate change that will cause great harm to human beings. Clinton has just formed a new foundation to save the world, naming the foundation of course after himself—the Clinton Global Initiative—with a Web site that also puts the former president's name out front, www.clintonglobalinitiative.com. In the foundation overview, Clinton embraces the global-warming hoax as true beyond reasonable doubt. Just read the first sentence of the Web site section devoted to climate change:

Since the late 1800s, industrialization has caused the average temperature of the Earth's surface to rise by 0.8 degrees Celsius. Left unchecked, the by-products of human activity could raise global temperatures an additional 5.8 degrees Celsius by century's end. This alarming trend is expected to cause severe storms, floods, and droughts.⁷

Right, Clinton links industrialization (i.e., the burning of fossil fuels) to global warming and to horrible climate change, all causal connections resulting in severe harm to living creatures. Note how Clinton presents his suppositions as certainties, virtual laws of nature, fully proven axioms. Any doubter would have to be either a fool or (like us) one of those right-wing conspiracy nuts the Clintons love to hate. Global-warming believers are true believers, and doubters are certainly to be castigated and demonized, not reasoned with.

Let's persist in our determination to examine the logic. Is there any hard scientific evidence that the global climate is changing for the worse?

Here are the climate effects environmentalists like to cite: sea levels are rising because the polar ice caps are melting and severe weather conditions—such as prolonged droughts—and more intense events—such as hurricanes, tornadoes, or severe storms—are seeming commonplace. We can now add tsunamis to the list, because those buying into the global-warming theory are certain to include such events as the December 26, 2004, tsunami as another unnatural natural event in the list of global-warming indicators. As a rule, we can postulate that any extreme weather condition will be attributed by environmentalists to human activity that causes global warming. Let's say we have an exceptionally hot summer. Why? Global warming. Yet the environmentalists will be silent if we have an exceptionally cold winter. Or let's assume a hurricane season is especially severe. Once again, global warming is blamed as the culprit.

Environmentalists have a much harder time proving the causal link. For starters, we simply lack good long-term data on basic climate observations, including records of precipitation, humidity, winds, and atmospheric pressure. Going back over a period as short as one hundred years, few accurate databases of historical climatic information exist, and those that do exist are not often reliable. We can impute some measures by examining data that may be contained in tree rings or core ice samples, but the result is broad measures, not detailed daily records on the fundamentals we would need to make an analysis. Are the average temperatures today in Cleveland, Ohio, or any other U.S. city, measuring hotter

or colder than one hundred years ago? two hundred years ago? three hundred years ago? We simply don't know, not with any degree of scientific certainty.

If real climatic trends can only be seen over hundreds or thousands of years, we have no choice but to go to inferential scientific measures. We can take ice-core samples or measure tree rings. Yet these measures always involve our inferences, a process very distinct from having precisely recorded contemporaneous readings. As we have already seen, we have good reason to believe that the fundamental global temperature and climate effects may be related to a swing between glacial cold and interglacial warming periods that the earth has been going through for about 1.8 million years. What we see as fluctuations in winds or storms today may be simply the normal variations expected in time series data, not readings that truly indicate the planet's climate has taken a fundamental change in direction.

Still, we should expect that any extreme weather condition we experience from now on will be cited by global-warming theorists as proof of their concept. If several bad tornadoes hit Kansas in rapid succession, we will all be expected to grasp the connection between the tornadoes and our use of gasoline. Yet we can readily cite instances to make impressionistic arguments that the climate has improved during the last century. The 1930s Dust Bowl involved one of the most severe droughts experienced in twentieth-century America. Because we don't have the Dust Bowl around anymore in states like Oklahoma and Kansas, does that mean the U.S. climate is getting better? For every severe hurricane today, historical records can be found for another. The same is true for tornadoes, floods, and even tsunamis.

Sea and ocean levels in various interglacial periods over the last 130,000 years have been higher than today. Those effects of rising waters were not due to any man-made industrial activity. Prior to 1850 human beings were not burning fossil fuels in any significant quantity. Nor was there an industrial revolution to blame for rising seas. Changes in sea level appear to occur naturally, apparently in response to whether the earth is in a glacial or interglacial period. The impact the greenhouse

effect has on sea appears minimal at best, especially in comparison with ice-age effects.

The attention of the environmentalists seem for some reason always to be focused on water events—amounts of rain, levels of snow, hurricanes, or the level of the sea. Why is this? Why don't advocates of the greenhouse effect claim that our burning of fossil fuels cause more volcanoes to erupt or earthquakes to happen? We never see arguments that the warming up of the earth causes more volcanoes and earthquakes. Maybe the explanation is that, psychologically, environmentalists just project from (a) carbon dioxide in the air, to (b) temperature variations that show warming trends, to (c) the thickness of the polar ice, or measurements of sea levels, or the severity of droughts and the violence of storms. Yet volcanoes and earthquakes are environmental phenomenon. Are they simply outside the greenhouse effect?

Moreover, the scientific evidence is that the oceans are not rising. The mean sea level was established in 1841 at the Isle of the Dead, Port Arthur, Tasmania, Australia. Exact measurements show at most the sea level rose no more than 1.6 centimeters, less than two-thirds of an inch, during all of the twentieth century. A good argument can be made that the measurements actually show a slight lowering of the mean sea level since measurements were first taken. Given that the seas in Southern Hemisphere oceans contain nearly two-thirds of the world's ocean waters, accurate measurements taken in Australia over more than a 160-year period should carry great weight for all but the most determined of the greenhouse-effect advocates.⁸

Nor does the scientific data support an easy conclusion that the world's glaciers are melting. The data is conflicting. Some glaciers are advancing, others are retreating.

The World Glacier Monitoring Service in Zurich has determined that 55 percent of the glaciers in high altitudes are advancing; in 1950, only 5 percent were advancing.⁹ Let's cite just one more example that seems both fair and typical. Researchers from the U.S. Geological Survey have documented that ten large calving glaciers in Alaska are advancing while the majority of Alaska glaciers are losing volume. Calving glaciers gener-

ally terminate at the sea, and they loose material when ice breaks off into the sea. Photographs of calving glaciers are often deceptive in that the glacier may actually be growing, even though the visuals of ice breaking into the sea give a dramatically different picture. The calving glaciers that are growing in Alaska include some of the larger ones, such as the Hubbard Glacier, the Meares Glacier in Prince William Sound, and the Harvard Glacier, which has a well-documented period of advance that began between 1905 and 1911 and continues today.¹⁰

The hype generated by the global-warming theorists has given birth to a worldwide climate study industry funded worldwide at an amazing level of around \$5 billion per year.¹¹ International organizations such as the World Meteorological Organization (WMO), the United Nations Environmental Program (UNEP), and the Intergovernmental Panel on Climate Change (IPCC), despite their huge funding, have generated nothing but dire warning after dire warning. Few stop to notice that their predictions are predictably wrong and their climate models are always being readjusted as a result.

Consider this commentary made by Dr. Theodor Landscheidt of the Schroeter Institute for Research in Cycles of Solar Activity in Nova Scotia, Canada:

Precise forecasts that prove correct are a sharp criterion for efficient science. The protagonists of global warming remain empty-handed in this respect in spite of great material and personal expense. In the eighties S. Schneider from the National Center for Atmospheric Research in Boulder, Colorado, predicted in his book *Global Warming* a huge jump in temperature, polar ice melting away, seas surging across the land, famine on an epidemic scale, and ecosystem collapse. Today this is no longer taken seriously. Yet other climatologists, too, made forecasts in the eighties they no longer maintain. C. D. Schönwiese, usually critical and cautious in his statements, still predicted in 1987 a 4.5° C rise in temperature until 2030, though only as an upper limit. He thought the sea level in the German Bay could rise by 1.5 m until 2040 and in the ocean around India even 2 to 3 m. A projection of his temperature forecasts yields 11.8° for the year

2100. At the climate conference in Villach [Austria] in 1985 similar predictions were presented to the public. The IPCC still predicted in 1990 and 1992 that global temperature would rise 1.9°–5.2° until 2100 and thought that a rise in sea level by 1.10 m was possible.

All these predictions have turned out to be untenable.¹²

Determining with precision whether or not we are experiencing climate change is another complex scientific problem. What is required is the creation of a computer model that both accurately accounts for historical climate observations and predicts future climatic events. Let's say we want to know whether we have more or less rainfall in a given geographical area. The question is relevant because global-warming activists may charge that the earth is experiencing more drought because increased levels of carbon dioxide thrown in the air by the burning of fossil fuels is warming the atmosphere to the point where less rain is falling on certain areas of the globe. To answer this question, scientists have to be able to construct a computer model that accurately turns out numbers that reflect the historical data pattern. Then the computer model must be tested to see if future predictions of rainfall levels are correct. If future predictions are wrong, which generally they are, then the scientists have to revise the model.

Scientists are far from having a reliable model to predict climate change. First there are too many variables. Consider for a moment the scores of variables involved: variations in solar energy output (including the frequency of sun spots), effects of ocean currents, wind variation, changes in urbanization or land mass occupied by human beings, forestation levels, changes in ground vegetation, and cloud levels and density, to name just a few. As we have mentioned, climate changes may occur over hundreds or thousands of years, and reliable data is simply not available. Even if data were available, the computing task is enormous and far beyond the range of today's most advanced supercomputers.

What generally happens is that scientists take a minimalist approach to constructing what are known as climatic global circulation models. Rather than attempt to model climate changes on some global scale, scien-

tists try for a reduced approach, limiting their analysis to a particular geographical area and a single climate phenomenon—perhaps rainfall, snow levels, or even temperature readings themselves—in one city, state, or region. When their predictions fail, the scientists refigure the variables, working until the model fits the data. Even then, the models rarely work reliably. The method is inductive, not deductive. Scientists get to the point where they don't really care why the variables in the model work just so the historical results can be turned out with some degree of accuracy.

The scientific models for explaining and predicting climatic change are so notoriously inaccurate that the U.S. Environmental Protection Agency has issued warnings about even using the computer-generated results:

Virtually all published estimates of how the climate could change in the United States are the results of computer models of the atmosphere known as "general circulation models." These complicated models are able to simulate many features of the climate, but they are still not accurate enough to produce reliable forecasts of how the climate may change; and the several models often yield contradictory results. For the time being, however, these models are about all we have to say how the climate may change in particular areas.

Given the unreliability of these models, researchers trying to understand the future impacts of climate change generally analyze different scenarios from several different climate models. The hope is that, by using a wide variety of different climate models, one's analysis can include the entire range of scientific uncertainty. For all these reasons, EPA reiterates the warning provided by all climate modelers to people considering the impacts of future climate change: the projections of climate change in specific areas are not forecast but are reasonable examples of how the climate might change.¹³

Radical environmentalists may dismiss the above caution simply because it was issued by a government agency. The challenge should then be issued back: show us a reliable scientific computer model of the climate

that accurately explains historical data and predicts future data. We have yet to see such a model in the scientific literature. The challenge should be easy to test. Bring forth the computer model and churn out some predictions about future climate. How much rain will fall on Massachusetts next summer? next year? How much snow will we see in New York next winter? What will be the average temperature in Georgia next summer? Let's take the predictions and see how accurate they are. The problem is that weather changes have so much variability that accurate specific predictions like these are nearly impossible. Even trend analyses are difficult. A historically hot summer or a historically cold winter does not necessarily predict the next summer or winter. A historically hot summer is as likely to be followed by a cold winter as by a mild winter. That's the problem.

This is why environmental activists are reduced to pointing out extreme weather events and claiming they are a result of global warming, whether causality can be proved or not, forgetting about predicting anything about future events from that one extreme event. This type of reasoning is easy to refute. Let's look back to historical records more than three hundred years old, back to the time when human beings were burning virtually no hydrocarbon fuels, and find some extreme weather events. We will not have to look far to find very old accounts of extreme droughts and catastrophic rainfalls. The explanation of these extreme climactic events cannot possibly be global warming caused by human activity. How about changes such as the expansion of the Sahara Desert that has been going on since ancient Carthage fell to the Roman Gen. Scipio Aemilianus and the city was burned to the ground in 146 BC? Was the expansion of the Sahara caused by the greenhouse effect? by global warming?

In the 1970s environmental alarmists were concerned that the earth was cooling off. Now we hear global-warming activists argue that the climate changes caused by global warming might actually cause global cooling, even possibly bringing on a new ice age.¹⁴ This was the theme of the 2004 Roland Emmerich film *The Day After Tomorrow*, in which we see global warming trigger a new ice age. Tornadoes flatten Los Angeles, a tidal wave hits New York City, and the entire Northern Hemisphere is

covered by the thick ice of a rapidly forming glacier. The film was produced during the 2004 presidential election campaign, possibly with the intention to embarrass President Bush. The movie audience seemed less than impressed and far from convinced. Nor did the film achieve any apparent adverse electoral effect on the Republican presidential and vice presidential candidates.

The point is that the predictions made by global-warming advocates do not have to be true or necessarily credible for them to be advanced in an effort to gain public acceptance. A supportive and uncritical press continues to give global-warming advocates extensive media coverage. Our conclusion here can be stated clearly and firmly: global-warming theory is not a scientific hypothesis whose validity can be demonstrated by rigorous, indisputable evidence. The global-warming theory has become a political statement whose advocates seem to believe their predetermined conclusions regardless of critical argument to the contrary.

THE UNDERLYING POLITICAL AND ECONOMIC AGENDA OF THE KYOTO TREATY

Nowhere is the environmentalist agenda clearer than in the blind determination with which they have pushed for U.S. adoption of the Kyoto Treaty. In March 2001 the Bush administration decided not to pursue ratification. Specifically, the Kyoto Protocol is an amendment to the U.N. Framework Convention on Climate Change (UNFCCC) designed to be a legally binding agreement under which the industrialized nations of the world, including the United States, are expected to pledge specified reductions in greenhouse gases by targeted dates. The Bush administration concluded that an underlying agenda of the Kyoto Protocol was to punish the United States. The United States emits some 5,410 million metric tons of carbon dioxide (some 20.1 tons per capita) compared with the European Union, which emits approximately 3,171 million metric tons of carbon dioxide annually (8.5 million tons per capita).

China, the world's second-largest emitter of carbon dioxide, was not initially intended to be a signatory. The target reductions for the United

States were among the largest reductions specified as a percentage of current emissions to be eliminated. The Bush administration objected not only to the larger burden the United States would have to bear in hitting the targets but also the absolute cost of the reductions and the subsequent burden these costs would place upon American business and the U.S. economy in general. Other issues involved the loss of sovereignty that was viewed as intrinsic to the treaty's assumption that the United States would submit to a legally binding agreement whose ultimate arbiter was the United Nations. Nor was the Bush administration convinced that the case had been built with sufficient scientific certainty so as to require such costly steps be taken now.

In July 1997 the U.S. Senate voted unanimously (95–0) to oppose any international treaty that would damage the U.S. economy by restricting energy usage or by raising the costs of fuel. Those voting for the resolution included John Kerry (D-MA) and Joseph Lieberman (D-CT) as well as John McCain (R-AZ). The Kyoto Protocol was signed, however, by the insistent initiatives of then Vice President Al Gore. And President Clinton never submitted the treaty to the Senate for ratification. As a result of this history, Gore became one of the principal political spokespersons for the Kyoto Protocol.

On January 15, 2004, Gore gave one of his typical speeches on global warming. He showed the audience pictures of glaciers one hundred years ago and compared them with photographs of the same glacier today. "In Glacier National Park, ninety years ago, the Grinnell Glacier looked like this. With one of my daughters, I hiked to the top of it in '98. It looks like this now. Twenty-seven of the thirty-eight glaciers in the park have melted. This was a popular one earlier in the century and now it's completely gone. And within fifteen years, this could be called 'The Park formerly known as Glacier.'" ¹⁵

The U.S. Geological Survey (USGS) agrees with Gore that the Grinnell Glacier has melted significantly. But unlike Gore, the USGS documents that all thirty-seven of the glaciers in Glacier Park "have receded dramatically since the mid-nineteenth century, the end of the Little Ice Age in the Western United States." The USGS points out that the Little

Ice Age comprised “a fairly long cool period during which glaciers expanded until the climate began to warm after the mid-1800’s.”¹⁶

Gore’s “evidence” is typical of the type of evidence cited by radical political extremists. Just because a glacier is diminishing does not mean we can reliably attribute the cause to the burning of hydrocarbon fuels by U.S. citizens in their automobiles on interstate highways. The phenomenon viewed scientifically is more likely attributable to swings in temperature over many decades, swings that may be sufficiently dramatic as to be described as moving from a Little Ice Age when the glaciers were formed.

Gore punctuated his rhetoric by taking what even he admitted was a cheap shot at the Bush administration:

And you know there’s a—well, I’ll tell this personal story. When I was in the sixth grade, I had a classmate in geography who pointed to the outline of South America and the outline of Africa and he asked the teacher: “Did they ever fit together?” And the teacher said: “Of course not! That’s the most ridiculous thing I’ve ever heard!” That child went on to become a drug addict and a ne’er do well. The teacher became Science Advisor in the current administration.¹⁷

The Gore speech was also highlighted by the typical demonizing of those who saw the issue of global warming differently than he did:

Now in spite of the clear evidence available all around us, there are many who still do not believe that global warming is a problem at all. And it’s no wonder because they are the targets of a massive and well-organized campaign of disinformation lavishly funded by polluters who are determined to prevent any action to reduce the greenhouse gas emissions that cause global warming out of a fear that their profits might be affected if they had to stop dumping so much pollution into the atmosphere.

And wealthy right-wing ideologues have joined with the most cynical and irresponsible companies within the oil and coal and mining industries to contribute large sums of money to finance pseudoscientific front groups that specialize in sowing confusion in the public’s mind about

global warming. They issue one misleading report after another, pretending that there is a significant disagreement in the legitimate scientific community in areas where there's actually a broad-based consensus.¹⁸

Gore did not stop there. He went on to call up another straw man, the tobacco industry, playing to the sentiments of his audience that tobacco companies would do anything to keep people smoking, even if smoking caused heart attacks and death, just as long as the tobacco companies could continue to make a profit by selling cigarettes. Here is how Gore phrased the rhetoric:

Now focus on these pseudoscientific groups that take money from the coal companies and mining and oil companies. The techniques that they use were pioneered years earlier by the tobacco industry in its long campaign to manufacture uncertainty in the public's mind about the health risks caused by tobacco smoke. You know, that's an industry that kills one out of every five of its customers. Not a good business plan unless they can find a way to recruit massive numbers of what they call "replacement smokers." All right? And so—and it's interesting—if you look at the names of the people who took money from the tobacco companies, laundered through law firms often—some of the same scientific camp-followers who took money from the tobacco industry as part of that effort are right now taking money from the coal and oil companies in return for their willingness to say with a straight face that global warming is not real. It is a fact.¹⁹

Demagoguery like this suggests that Gore is less interested in scientific evidence than he is determined to make political points that deride and diminish anyone who disagrees with him. The tactics of radical environmentalists have been to push for media and general public acceptance of the basic global-warming arguments, regardless of legitimate scientific questioning or refutation. By repeatedly putting the topic on the agenda, the advocates of the Kyoto Protocol believe that ultimately opponents will simply give in. A key strategy has been to push for top public offi-

cials, including President Bush, to make fundamental admissions, such as agreeing that the earth is getting warmer or admitting human activity is a culprit.

At the G8 meeting scheduled for Scotland in July 2005, environmentalists pressed their agenda again. A great victory was scored when the president, on his way to the meeting, commented as he traveled from Denmark to Scotland in a manner that suggested he had caved in and accepted all the principle radical environmentalist articles of faith. Bush was quoted as saying, "I recognize the surface of the earth is warmer and that an increase in greenhouse gases caused by humans is contributing to the problem."²⁰ A principle of propaganda that would have been recognized by the twentieth-century masters of the art was in evidence here: repeat a lie often enough and it becomes truth, regardless of the evidence to the contrary.

If the Kyoto Protocol, or any international agreement like it, is implemented, we face a number of major costs—not just the economic impact of implementing measures to reduce emissions of carbon dioxide, but also the establishment of a large government bureaucracy to supervise the enterprise. In the darkest scenario, the government bureaucracy would be an international bureaucracy with legal authority to intervene directly within the borders of the United States to impose compliance with its dictates.

In pushing to make carbon dioxide a noxious chemical in the minds of Americans, radical environmentalists have joined forces with the extreme political Left. Imposing economic costs upon American business, even if the costs were to slow the economy significantly, might just be seen as a price worth bearing. Moreover, the imposition of the penalty may actually be the real goal sought for its own merit. If American consumers and American businesses are seen as somehow "morally evil" for burning "fossil fuels" in excess of some proportionate standard, then imposing economic penalties upon us may well be viewed as a justifiable remedy. The economic harm we suffer could well be perceived by such radical environmentalists and extreme leftists as just retribution for our lavish lifestyle and our selfish abuse of the earth's resources. As we

maintained earlier, the underlying agenda is not the protection of the environment but the imposing of a moral and political cost upon the United States.

GLOBAL WARMING, JUST ANOTHER MALTHUSIAN SCARE?

Environmentalists have conducted an emotional, highly charged political campaign to press their agenda that human activity has caused global warming with disastrous climate change consequences. As Patrick Michaels, professor of environmental studies at the University of Virginia in Charlottesville, has pointed out, this highly charged, emotional agenda has dominated the attention of the mainstream mass media, many prominent politicians, and the public even though the science behind the idea of “anthropogenic global warming” is nowhere near conclusive.

It is doubtless that large-scale environmental changes known popularly as the “Greenhouse Effect” or “Global Warming” have commanded as much public attention as any environmental issue in recent history. As an example, *Time* painted the following picture in its 1988 “Man of the Year” issue, featuring Planet Earth: If left unchecked, anthropogenic alterations of the atmosphere will bring, by the years 2030–2050, a global temperature rise of 4°C, ecological chaos including famine, related civil strife, and tidal waves crashing through a Manhattan landscaped with palm trees. As a rhetorical vehicle, I will refer to this scenario as the “Popular Vision” throughout this article.

Such scenarios also abound in the writings of politically active environmental scientists, environmental lobbyists, and newswriters. United States elected officials have compared the current situation to that of fascist Germany, where several events, such as Kristallnacht, presaged the holocaust. Those that do not recognize this have been labeled modern Neville Chamberlains. Draconian interventionist legislation has been proposed, and the implementation of policies to counter “global warming” is now a touchstone of US foreign policy.²¹

Once global-warming theses become conventional wisdom, opponents can be labeled “right-wing kooks” in an attempt to discredit their arguments before anyone can seriously consider the validity of their criticism.

Bjørn Lomborg, an associate professor of statistics in the department of political science at the University of Aarhus in Denmark, has developed an interesting economic analysis of the global-warming issue. Lomborg is a former member of Greenpeace and generally supportive of the argument that human activity has increased carbon-dioxide emissions to the point where the earth is warming up. He considers himself a “skeptical environmentalist,” however, in that he is not convinced the climate changes resulting from global warming are likely to be dramatic or terribly harmful. Moreover, he considers the cost of reducing carbon dioxide to be too high given the low likelihood that we will experience climate changes that we cannot manage. This is Lomborg’s central argument, namely that “we should not spend vast amounts of money to cut a tiny slice of the global temperature increase when this constitutes a poor use of resources and when we could probably use these funds far more effectively in the developing world.”²²

In other words, Lomborg argues that the cure proposed is more costly than the danger warrants spending.

To give a feel for the size of the problem—the Kyoto Protocol will likely cost at least \$150 billion a year, and possibly much more. UNICEF estimates that just \$70–80 billion a year could give all Third World inhabitants access to the basics like health, education, water and sanitation. More important still is the fact that if we could muster such a massive investment in the present-day developing countries this would also give them a much better future position in terms of resources and infrastructure from which to manage a future global warming.²³

This type of cost-benefit analysis is rare among thinkers sympathetic to the environmentalist movement. Generally, radical environmentalists write in alarmist tones, suggesting we should spend whatever it takes to

reduce carbon-dioxide emissions resulting from the burning of hydrocarbon fuels. If we do not heed their advice, the radical environmentalists act as if we are destroying the potential for future human life on the planet. Critics such as Lomborg add a perspective to the debate, reminding us that "it is not true that global warming has made us experience or will make us experience great increases in hurricanes and storms, and likewise the claim of an unprecedented and ever stronger El Niño seems weak and theoretically unsubstantiated."²⁴ If we are not facing the brink of disaster, as the radical environmentalists argue, more measured steps to deal with carbon dioxide emissions might be wiser, especially when weighed against the trade offs where the dollars invested to reduce carbon-dioxide emissions might be better spent.

Julian Simon, a professor of business administration at the University of Maryland, wrote at length about the "seductiveness of the Malthusian logic."²⁵ Simon's perspective was that humans have made dramatic advances since the eighteenth century. He asked, "Why is there so much false bad news about the subjects of the environment, resources, and population?" Even more important, he wondered, "Why do we believe so much false bad news about the environment, resources, and population?"²⁶

Simon was perplexed that the mainstream media buys so completely the dire predictions advanced by the radical environmental movement, especially when the scientific basis for dire conclusions is less than solid:

The current gloom-and-doom about an environmental crisis is all wrong on the scientific facts. Even the Environmental Protection Agency acknowledges that U.S. air and water have been getting cleaner rather than dirtier in the past few decades. Every agricultural economist knows that the world's population has been eating better ever since World War II, defying simplistic Malthusian reasoning. Every resource economist knows that all natural resources have been getting more available rather than scarce, as shown by their falling prices over the decades and centuries. And every demographer knows that the death rate has been falling all over the world; life expectancy almost tripled in the rich coun-

tries in the past two centuries and almost doubled in the poor countries in just the past four decades.²⁷

It is almost as if the radical environmentalists are playing off the idea that hydrocarbon fuel is "dirty." People feel oil is "oily," not appealing to the touch, or that gasoline spilled on your hands feels nasty and stains clothes. We think of carbon as the dirty ashes and cinders that result from a fire. All these are distasteful images, so hydrocarbons must be bad. Yet, again, projecting human reactions onto nature is not necessarily justified. Trees breathe carbon dioxide; humans exhale carbon dioxide. Diamonds are pure carbon. Why don't we think of diamonds when we think of hydrocarbon fuels?

Lomborg warns us that if we take major steps to reduce carbon-dioxide emissions, the economic cost we will bear may be disproportionately large, as much as \$5 trillion:

Global warming will not decrease food production, it will probably not increase storminess or the frequency of hurricanes, it will not increase the impact of malaria or indeed cause more deaths. It is even unlikely that it will cause more flood victims, because a much richer world will protect itself better. However, global warming will have serious costs—the total cost is about \$5 trillion.²⁸

Lomborg cautions that \$5 trillion would be better spent developing the Third World, especially since credible science indicates the climate change effects will be minimal and manageable.

Radical environmentalists like to charge that anyone who has optimism about the ability of human beings to solve Malthusian problems are "cornucopia-thinkers" who blindly believe in abundant resources and no limitations on human creativity. What we have stressed here is the need to keep in perspective the scientific difficulties with concluding that the burning of fossil fuels generates enough carbon dioxide to cause such a magnitude of global warming that we will inevitably suffer disastrous climate changes. A radical environmental movement characterized by the

type of rhetoric championed by Al Gore should give us all reason for pause. We have more proven reserves of oil and natural gas today than we have ever had in our history. The earth is sufficiently inhabitable to accommodate 6.5 billion people. In the scope of human problems, putting global warming at the top of the list is far from justified.

SCIENTISTS BET ON GLOBAL COOLING

In August 2005, as this book was going to press, Matt Drudge featured a series of articles that highlighted a global heat wave that was causing discomfort in major cities all over the world. Because Drudge's Web site (www.drudgereport.com) is a major destination for news professionals, what he posts on a daily basis tends to impact the new cycle in the media generally. On August 19, Drudge ran a story about Senators John McCain and Hillary Clinton, who were among a group of senators touring Alaska. Evidently the senators met with a group of Native Americans on Alaska's northern coast, where Native Americans were complaining about the melting permafrost and coastal erosion as evidence of global warming.

The Alaska trip produced a media photo opportunity where the senators could be filmed wearing light coats, walking under umbrellas in a drizzle. The theme coming out of the event was that anybody trekking to Alaska in the summer could obviously see that the earth was warming up. Senator Clinton commented: "I don't think there is any doubt left for anyone who actually looks at the science. There are still some holdouts, but they are fighting a losing battle. The science is overwhelming, but what is deeply concerning is that climate change is accelerating." The senators were appreciative of the Alaska guides who took the time to show them how "climate change" is affecting Alaska. Clinton was convinced: "I don't think anyone who has talked to these individuals as well as the scientists would have any doubt that this is a real and growing problem."²⁹ Many who have spent summers in Alaska were not convinced, having experienced many Alaskan summers when much of the state is warm. What seemed clear from the senators' jaunt to Alaska was that the issues of global warming and climate change are likely to become issues in the

2008 presidential campaign. McCain and Clinton seemed anxious to position themselves on the liberal side of the argument.

After we read Drudge's posts, we e-mailed him a caution not to be taken in by the environmental hype on these issues. We sent him a draft of this chapter. Typically, we received no response, but within the next few days he posted an article from the other side of the issue. That article reported that Russian solar physicists Galina Mashnich and Vladimir Bashkirtsev had wagered a British climate expert, James Annan, ten thousand dollars that the earth would cool over the next decade. The Russian solar physicists believe that the earth's temperature is affected more by the sun than by burning hydrocarbon fuels. According to their research, changes in the number and size of sunspots have a measurable effect upon temperature changes. Because they believe the sun is going into a less active phase in the next decade, the Russian solar physicists believe the earth will cool, experiencing a measurable drop in temperatures.³⁰ We will have to see who wins, since the bet will be determined by a series of agreed-upon temperature measurements to be made between 2012 and 2017. Still, Drudge's decision to post the article was positive. His readers should know that the scientific evidence is still far from settled. Evidently credible scientists still believe it is reasonable to wager one another over whether the earth is warming up or cooling off.

5

THE FOLLY OF OIL CONSERVATION

It is no program simply to say "use less energy."

—RONALD REAGAN,
November 13, 1979

GLOBAL-WARMING ACTIVISTS INEVITABLY propose three solutions. First and foremost, they encourage oil conservation. Second, they admonish us to use alternative fuels, such as wind technology and hydrogen-powered cars. Third, they press for government regulations to force oil conservation, mostly because they believe we will have to be coerced into making the right choices for our own survival. None of these approaches have worked to date. Yet that doesn't stop the environmental crowd. As we have seen, their underlying agenda is a political agenda. No true-believing fossil-fuel theorist or global-warming alarmist is going to be dissuaded from the cause by scientific or behavioral evidence to the contrary.

In this chapter we are going to focus on the first two proposed solutions. Why don't we embrace the call for energy conservation? Why don't we get enthusiastic about using alternative fuels? The answers are simple. We don't believe either approach has a chance of working. Why not? We are going to make an argument here that economic behavior is motivated

by market forces, plain and simple. Appeals to conserve energy may sound good, but they don't work. Alternative fuels sound interesting, but they have not been proven to be economically viable or able to stand without the artificial support of government tax incentives. The only available technology that has a chance of making a major contribution is nuclear energy. We will explore this alternative, fully aware that the environmental Left can be expected to oppose any expansion of America's nuclear power plant system as virulently as it did in the 1970s.

Passing laws to enforce a conservationist agenda may be satisfying to true-believers, but our history when government attempts to regulate energy economics is not very encouraging.

Remember when Jimmy Carter had solar panels installed on the White House while he attempted to preach energy conservation to America. Ronald Reagan had the solar panels removed as he engineered a new era of market deregulation. Under Jimmy Carter we saw one oil disaster after another, from the shock of gas lines and high prices to the 1979 revolution in Iran, which has managed to keep Iranian oil off the U.S. market for more than a quarter century. Even today Carter remains a hero to environmentalists, despite the fact that none of his energy conservation proposals ever worked.¹

Maybe this time around we should make sure we understand market forces before we start legislating.

OIL CONSERVATION, A KNEE-JERK REACTION?

When faced with the oil crisis of his day, Jimmy Carter gave us a great example of his natural impulse to blame us for our profligate ways and to demand conservation. In an April 18, 1977, speech televised to the nation from the White House, Carter listed ten principles that were supposed to save us from running out of oil, a crisis he said was unavoidable by the middle 1980s unless we followed this advice. If you guessed that conservation was his sixth and most important principle, you are right. He said the cornerstone of his policy was "to reduce the demand through conservation."

Our emphasis on conservation is a clear difference between this plan and others which merely encourage crash production efforts. Conservation is the quickest, cheapest, most practical source of energy.²

In the 1970s we did not end the oil crisis with conservation. Why should we believe conservation is the solution today?

AMERICANS KEEP PUMPING GAS

In the first months of 2005, oil increased to \$50 a barrel and held there. Then oil advanced to \$60 a barrel and once again held there. We heard many dire predictions that Americans would stop driving, that our economy would come to a grinding halt. Again, the predictions were wrong.

Americans keep driving their cars because, even at these higher prices, the marginal economic decisions made by motorists are such that they continue to drive their cars. A twenty-five-gallon tank costs \$37.50 to fill when gasoline costs \$1.50 per gallon. The same gas tank costs \$55.00 to fill when gasoline costs \$2.20 per gallon. The increase of \$18.00 is clearly noticeable, but not so noticeable that people quit driving. If the vehicle gets fifteen miles per gallon, a twenty-five-gallon tank of gas will take you approximately 375 miles. At \$1.50 per gallon, that comes to about ten cents a mile. If the gas costs \$2.20 per gallon, you are paying about fifteen cents a mile. For a great majority of drivers, that is still a bargain.

Looked at another way, adjusted for inflation, the 1981 price for a barrel of oil today would be more like \$85 per barrel. This was calculated by an oil analyst for Oppenheimer and Company, when oil future prices were around \$56 per barrel.³ The American Automobile Association (AAA) maintains that the increased cost of gasoline is almost offset by lower costs for auto maintenance, registration, tires, and taxes. The per-mile cost of driving a car in 2005 is estimated to be 56.2 cents in 2005, compared to 56.1 cents in 2004, after taking into consideration all costs, including the cost of buying the car.⁴

The second quarter of 2005 showed continued strong growth in the

U.S. economy. The Commerce Department reported that gross domestic product (GDP) expanded at an annual rate of 3.4 percent. This was the ninth consecutive quarter that GDP grew by 3 percent on a year-to-year basis. Granted, the first quarter GDP numbers showed a 3.8 percent growth, yet the second quarter numbers were supported by strong economic indicators suggesting the economy was still in an expansion mode.⁵

At some point, increases in gasoline prices will cause a slowdown in the U.S. economy, possibly if gasoline should hit \$3.00 a gallon, almost certainly if gas were to hit \$5.00 a gallon. Still, gas prices cannot be examined in isolation. In 2005, when Americans looked at the dramatically increasing prices of the homes they own, the overall psychology was to feel better off financially. The financial decisions that constitute our economy are made by millions of consumers who each calculate their own particular advantage. Consumers willing to pay the price don't care about somebody else's judgment that driving their cars is environmentally unsound or morally wrong because they use too much gasoline.

In the 1970s, under Jimmy Carter, when gasoline was in short supply and long lines clogged the gas stations, Americans did adapt their behavior by moving toward smaller, more gasoline-efficient automobiles. These decisions, however, were market-driven, not politically mandated. If gasoline prices were to rise today to a point where the economy is hurt, there will certainly be political consequences, but the fundamental adjustments will be made by individual consumers who alter their driving and car-purchasing behavior as they adjust to the higher prices. Economists can argue about the exact price where gasoline costs will adversely harm the economy. Still, in the final analysis, any conservation that results will be consumer-driven, not government-mandated.

AMERICA AND SAUDI ARABIA: TWO SIDES OF THE SAME OIL COIN

In the last twenty-five years, U.S. dependence on foreign oil has increased dramatically, a subject we will discuss fully in the next chapter. Fossil-fuel theorists, global-warming alarmists, and environmentalists all

point to this trend as a serious problem. Here we want to introduce a single theme: the move to import more oil is market-driven, and so far the market appears ready and able to supply America's need. At present there has been more than enough oil internationally to supply our need for foreign fuel. Let's examine here just how the international market works.

In 1973 oil imports accounted for about one-third of all U.S. petroleum needs. In 2005 imports supply nearly 60 percent of our petroleum needs. So the volume of oil imports has increased dramatically, nearly doubling from the 1991 total of 6.8 million barrels imported per day to a 2004 total of 11.8 million barrels imported each day. Today we import more oil than we produce domestically.

This is not just a function of increasing domestic demand; U.S. oil production has decreased in absolute terms as well. In 1985 U.S. domestic oil production was averaging 10.6 million barrels of oil a day. Data for the first ten months of 2004 showed that U.S. oil production was averaging only 5.4 million barrels per day, a five-year low.⁶ Conventional theorists, as we have already explained, are convinced that U.S. oil production has peaked and there is no prospect that any significant new amount of U.S. oil will ever be found. Believing that oil is fossil fuel, the common wisdom is that America has already used up the majority of the oil that lies within our territory. From here on, conventional analysts see America's future as one where our dependence on foreign oil will only increase.

We have already disagreed with this premise. With sufficient political resolve, we believe the U.S. domestic production of oil could increase dramatically. The three remaining U.S. oil-producing areas of any significance are the Gulf of Mexico, Texas, and Alaska's North Slope. We will return to this topic in the last chapter, when we recommend opening up U.S. oil exploration to reduce our dependence on foreign oil. Right now, let's continue with the market analysis.

Today about 70 percent of U.S. oil imports come from five countries, three of which are in the Western Hemisphere. In the first months of 2005 we imported about 1.5 million barrels of oil a day from Canada, Mexico, and Saudi Arabia each. An additional 1.3 million barrels a day comes from Venezuela, and 1 million barrels from Nigeria. Of these, our most flexible

international supplier has been Saudi Arabia, a country that has been responsive to U.S. requests to increase production to maintain world supplies at a level consistent with the growth of demand.

From a point of view of pure economics, we have to ask what is wrong with this. We are still getting all the oil we need, even if some of it comes from overseas. We also spread our risk by drawing from as many as twenty countries to import the oil we need. Note also that we are not dependent upon Saudi Arabia for our foreign oil. If we drew no foreign oil from Saudi Arabia, we could draw more from others to get the oil we need.

Let's look at this from the viewpoint of Saudi Arabia. A considerable amount of wealth is transferred every day from the United States to Saudi Arabia. We will assume the price of oil stays at \$50 per barrel. With 1.5 million barrels each day being exported from Saudi Arabia, each day \$75 million goes from the United States to Saudi Arabia, for an annual total of \$27.4 billion dollars.

Many Americans look at this outflow as dollars taken from our pockets and sent via the gasoline pumps to Saudi Arabia. Yet when the dollars get to Saudi Arabia, the problem becomes one of where to invest them. Many of the dollars shipped to Saudi Arabia for oil end up returning to the United States. Between October 2004 and March 2005, Saudi Arabia and the other oil-exporting countries have reinvested approximately \$43.3 billion in U.S. assets. Many of these dollars went into U.S. Treasury bonds, helping to finance the U.S. debt. The rest went into U.S. equity markets, buying the stock offerings of U.S. companies listed on U.S. exchanges.⁷

Other dollars are going into Saudi Arabian real estate and the Saudi Arabian stock market. In the first seven months of 2005 the Shuaa Capital Arab composite index, an important Saudi Arabian index tracking 254 companies in 12 Arab nations, rose approximately 67 percent after two years in which the index had gained 60 percent each year. Since 2001 the market capitalization on the six stock exchanges of the Persian Gulf's main oil exporters (including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates) has nearly tripled to about

\$875 billion. Construction is also booming, especially in the emirate of Dubai, a resort destination for many Arab nations of the Middle East.⁸

In the 1970s surging oil prices also sent windfall oil profits to the Middle Eastern oil-exporting countries. Then, too, their investment in the United States increased dramatically. Recently, the political Left has portrayed Saudi Arabian investment in the United States as a frightening scenario. Michael Moore, in his anti-Bush film *Fahrenheit 9/11* represents that the Saudis have approximately \$860 billion invested in the United States, primarily in equities. Moore contends the Saudis have made major investments in blue-chip stocks, including Citibank and AOL Time Warner. The Saudis own approximately 7 percent of America, Moore claims, as a result of these investments. Moore also suggests the Saudis have \$1 trillion in U.S. banks, and he comments that a huge blow would be done to the U.S. economy if the Saudis were to withdraw these funds suddenly.⁹

His point is to scare Americans that George H. W. Bush and George W. Bush have "sold out" the United States to the Saudis in return for oil. Moore also tries to establish that George W. Bush has exploited a "special relationship" with the House of Saud, whereby he and his father have continued to receive favorable investments and business opportunities from the Saudi royal family. In return, Bush supposedly has favored the Saudis, allowing the bin Laden family to escape America immediately after 9/11 and taking active steps to prevent any government investigation of 9/11 that could be embarrassing to the Saudi royal family.

The conspiracy nature of this thinking is extreme and largely established only by innuendo. Regarding any investments the Saudis have made in the United States, there is another side to this story. Foreign investment in the United States makes foreign investors more dependent upon the reality that the United States remains economically strong. When stock prices decline broadly on U.S. markets, all investors lose money, regardless of whether they are U.S. or foreign investors. The same holds true for real-estate investments. When prices decline broadly in U.S. real-estate markets, all real-estate investors lose money, including the foreign investors. In the 1980s Japanese investors suffered enormous losses from investing in overpriced U.S. real estate, especially in Hawaii.

When the bubble burst in these real-estate markets, the Japanese suffered huge losses that compounded simultaneous losses in Japan's domestic real-estate market.

If the Saudis were to take any steps calculated to harm the United States or to damage the U.S. economy, they would in effect be taking steps against themselves, putting their own valuable investments and assets within the United States at risk.

And just because foreigners invest in U.S. markets does not mean they are always winners. The reality is that foreign investment makes U.S. markets and foreign markets more interdependent. We must also remember that U.S. investors buy stocks and real estate in foreign markets as well. In July 2005 Saudi Arabia announced a series of measures designed to make Saudi Arabia more friendly to foreign investors.¹⁰ Why do this when Saudi Arabia is realizing a nearly unprecedented increase in U.S.-dollar foreign reserves resulting from increasing oil prices? In today's international economy, the move by nearly all nations is to become more involved in foreign trade and foreign investment—not less.

There has never been greater pressure from a wide range of countries to join the World Trade Organization. Regional trade agreements are being pursued around the globe in ever-increasing numbers. The world market is growing, and nations are becoming more economically interdependent whether we like it or not. In January 1994 Canada, the United States, and Mexico formed the world's largest free-trade area by entering into the North American Free Trade Agreement (NAFTA). On August 2, 2005, President Bush signed a trade agreement with five Central American countries (Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua). Known as the Central American Free Trade Association (CAFTA), the agreement expands what has been accomplished with NAFTA, possibly setting the stage for additional Western Hemisphere agreements that could reach from Canada to Argentina. The development of regional and worldwide free-trade markets is clearly under way, with the likely result of international cross-investment among participating countries.

Let's consider another economic dimension of surging oil prices.

Money flowing overseas for higher gasoline prices in the United States may also reduce consumer domestic spending. Some economists calculate that for every one-cent rise in the price of gasoline at the pump, consumer spending declines \$1.3 billion.¹¹ As we have pointed out, even with gasoline prices dramatically increasing to more than two dollars a gallon, consumers have continued spending, and the U.S. economic numbers have continued to advance generally. In short, the economy has absorbed the increasing oil prices. But we have also noted that adverse impacts on the U.S. economy are likely should U.S. gasoline prices continue to increase, possibly to three or five dollars a gallon and almost certainly at ten dollars a gallon. The U.S. economy cannot endlessly absorb gasoline price increases without suffering an adverse effect. As we have just seen, however, that adverse effect will also boomerang on the oil-exporting nations to the extent they have reinvested U.S.-dollar foreign reserves into U.S. investments, including Treasury bonds.

Let's also remember that many U.S. oil companies and gas-station operators have benefited from these higher prices. Second-quarter 2005 earnings for U.S. oil companies reached record levels. ExxonMobil posted second-quarter 2005 earnings of approximately \$8 billion, the second highest in the company's history. ConocoPhillips posted a 51 percent gain in second-quarter 2005 profits, to report \$3.1 billion in earnings.¹² In the 1970s, when U.S. oil companies reflected large gains in profit from rising oil prices, the Carter administration sought a windfall-profits tax, as if the oil companies had done something wrong. The U.S. economy is still a capitalistic system, and making profits in business is not yet a crime. The profits realized by the oil companies is invested back into the economy in many forms, including dividends and additional resources for expanded oil exploration within the United States. Profits, even large or unexpected profits, realized by U.S. oil companies have a positive effect on the U.S. economy, not a negative effect.

Besides, if higher oil prices should depress the U.S. economy, the resulting drop off will set in motion economic forces that will most likely put a brake on the upward movement of gasoline prices. Very little is certain in economics, but prices always seem to change direction when the

economic forces that have led them to go up (or down) have sufficiently played out, and countervailing economic forces build and move the markets in the opposite direction. The market itself will adjust to higher oil prices when they reach a sufficiently high level that the overall impact on the U.S. economy is negative. At that point, oil companies and oil exporters will realize that prices must come down if their market share is to be maintained.

Again, when we look at the other side of the coin, we realize that the Saudi Arabian economy is dependent on oil exports. Currently oil-export revenues are estimated to make up 90–95 percent of total Saudi export earnings. Between 70–80 percent of the Saudi Arabian state revenues depend on oil-export revenues. Moreover, oil-export revenues make up about 40 percent of Saudi Arabia's gross domestic product. With 40 percent of the Saudi GDP coming from oil, the Saudis stand to be whipsawed by dramatic changes in oil prices and oil demand.

With oil prices surging, the Saudis are estimated to have received a windfall increase of \$30 billion in oil revenues in 2004. Total gross revenue from oil exports in 2004 was estimated to have earned them some \$100 billion per year, which translates into roughly \$274 million daily. Originally, when Saudi Arabian economists prepared their economic forecasts for 2004, the expectation was that the government would experience a budget deficit. That calculation, however, was predicated on the assumption that oil would stay at \$19 per barrel. In mid-2004, however, the Saudi Finance Ministry expected a huge budget surplus of \$26.2 billion, due almost entirely to the dramatic 2004 increase in the cost of oil.¹³ Saudi Arabia will not want to see this revenue stop, even if investing it wisely, as we have seen, requires both skill and good luck.

The majority of Saudi Arabia's oil exports (about 60 percent) go to China, India, Japan, and South Korea. Yet Saudi Arabia wants to increase its market share in the United States. Why? The United States is by far the largest market for oil. Currently we consume about one-fourth of the world's oil, and that market dominance is not likely to diminish for some considerable time. Granted, China and India are emerging oil consumers of major significance. Still, their industrial economies and their lifestyles

have a long way to go. Today the United States consumes roughly 20 million barrels of oil daily. By comparison, China consumes about 6.83 million barrels a day, and India about 2.3 million. We are confident that one hundred years from now China and India will have closed these gaps considerably.

Today Saudi Arabia is happy to have an increasing share in providing oil to America. What has happened is not that Saudi Arabia has won and the United States has lost simply because we are importing 1.5 million barrels of oil a day from the Saudis. We want to stress that what has happened is that the United States and Saudi Arabia have become more *interdependent*, whether the political pundits realize it or not. We could each do without the other, but working together still continues to make sense for both.

The concept of world interdependence is not a right-wing conservative idea. The principle was first articulated by John F. Kennedy in an address he gave at Independence Hall in Philadelphia on July 4, 1962. His words that day were directed to the Atlantic partnership his administration was then seeking to establish with Europe:

But I will say here and now, on this Day of Independence, that the United States will be ready for a Declaration of Interdependence, that we will be prepared to discuss with a united Europe the ways and means of forming a concrete Atlantic partnership, a mutually beneficial partnership between the new union now emerging in Europe and the old American Union founded here 175 years ago.

All this will not be completed in a year, but let the world know it is our goal.

In urging the adoption of the United States Constitution, Alexander Hamilton told his fellow New Yorkers "to think continentally." Today Americans must learn to think intercontinentally.¹⁴

Kennedy's vision is now being realized as world markets are growing in importance, supplanting in importance the economic effects that in previous generations would have been confined to the borders of

individual countries. The emerging international oil market demands that we grasp this vision of interdependence if we are truly to understand the dynamics at play.

We have also begun to create interdependency with our other major oil suppliers, including Canada, Mexico, Nigeria, and Venezuela. Each side of the oil coin, importer as well as exporter, has a monetary stake in the economic health of the other. In today's world economy, international trading partners are having to realize the fundamental equation that their relationship is mutually dependent whether they like it or not. The adjustments we see in the world economic markets may not be as easy if oil reaches seventy or eighty dollars a barrel. Yet we should avoid responding emotionally. Projecting our preconceived notions on markets or predicting what we would like to see happen can be very embarrassing if investments made on those prejudices turn out to be losers. Markets tend to be very uncaring about the emotions of investors.

This thinking is in direct contradiction with the defeatism at the heart of fossil-fuel, global-warming, and much environmentalist thinking. Let's return once more to Jimmy Carter's April 18, 1977, televised address. What Carter said that day nearly thirty years ago could easily be said today by the pessimists who dominate much of the debate in the mass media:

The oil and natural gas we rely on for 75 percent of our energy are running out. In spite of increased effort, domestic production has been dropping steadily at about six percent a year. Imports have doubled in the last five years. Our nation's independence of economic and political action is becoming increasingly constrained. Unless profound changes are made to lower oil consumption, we now believe that early in the 1980s the world will be demanding more oil than it can produce.¹⁵

As we have pointed out, Carter was wrong—we did not run out of oil. Moreover, we did not need to impose government-mandated conservation or even depend on the willingness of American consumers to use less gasoline because that was the “right thing” to do. In the 1970s Americans

moved to smaller, more gas-efficient cars and pumped less gas for market reasons. Gas cost more. That alone was enough for the market to impose the corrective needed. When gas prices came down, consumers bought more gas. In the 1990s, when gas was once again relatively cheap, consumers bought bigger cars, including SUVs, and drove even more. There was nothing “wrong” with that behavior—it reflects how rational consumers should be expected to behave in a relatively free-market economy.

What should be obvious is that Carter had almost no understanding of how world oil markets work. When commodities hit higher prices, new opportunities for competition open up. Oil that is left in the ground at twenty-five dollars per barrel may be worth drilling for at sixty dollars per barrel. Markets don't give up just because politicians do.

WHY ARE WE SAVING THE OIL ANYWAY?

So let's ask a fundamental question. If we're running out of oil, what point is there in trying to preserve it? At best, that logic only prolongs the inevitable. Why don't we use what we have right now? As supplies decrease, the price should increase. Increasing prices will either cause conservation or stimulate alternatives. Either way, the market will drive the adjustment, not politicians articulating platitudes.

Environmentalists have fought tooth and nail repeated attempts to grant oil exploration leases off the shores of Florida and California. The same is true for the Arctic National Wildlife Refuge (ANWR) in Alaska. We could also look to the Gulf of Mexico to expand oil-exploration efforts. Producing wells continue to indicate that we have extensive oil reserves that have not yet been tapped in all these areas. The American public is being whipsawed between the concerns generated by the fossil-fuel theorists, greenhouse-effect alarmists, and environmentalists. We don't know which is worse: a fear that we are running out of oil or a concern that we will wreck the environment if we look for more oil.

Again, environmentalists pursue with an emotional pitch that borders on hysteria the argument that oil exploration will destroy the environment. Yes, an oil spill off the shores of Southern California in 1969

did harm thirty miles of beach near Santa Barbara. Yes, in 1989, the *Exxon Valdez* oil tanker did run aground on Bligh Reef in Alaska, spilling some eleven million gallons of crude oil into Prince William Sound. In both cases, the news coverage and resulting photographs produced disturbing images that remain even today in people's minds. What is not appreciated is that oil exploration has continued off the California coast since 1969, and we have continued drilling oil in Alaska since 1989. These environmental disasters were rare occurrences, not inevitable and unavoidable consequences of oil production off the shores of California or in the ANWR. Besides, when we return today to the site of both incidents, we see clean water, abundant wildlife, and a pristine environment. Still, many people persist in seeing only the image of the damage, not the restored environment there today.

In the years since 1969 we can recall many instances where airliners have crashed, killing dozens or hundreds of passengers. We have not closed down commercial airlines. Even after 9-11, we implemented increased precautions and kept flying. Why is the same not true with oil exploration? Each catastrophe suffered by human beings causes extreme suffering and loss for those involved and for their loved ones. All people of good will suffer over the hurt of these incidents. The images linger in our collective memory and cause renewed pain whenever they are revisited. Yet we continue.

No one would argue that increased environmental precautions need to be taken with oil exploration and production. Radical environmentalists, however, want all drilling stopped because some harm might occur. Extreme environmentalists often appear to have no sense of balance. If we harm one bird, is that too much a price to pay for producing oil? Sometimes extreme environmentalists sound as if their goal is to stop industrialized society altogether, so the world can return to some idealized image of nature without human beings. Yes, we are told that man can live in "harmony with nature," but somehow for extreme environmentalists that means we must give up or dramatically reduce our use of carbon-based fuels and all the industry and lifestyle advantages we derive from the use of those carbon-based fuels.

President George W. Bush has spoken eloquently about the need to pursue oil production in Alaska:

By far the most promising site for oil in America is the Arctic National Wildlife Refuge in Alaska. Technology now makes it possible to reach the oil reserves in ANWR by drilling on just 2,000 of the 19 million acres. Developing this tiny area could eventually yield up to a million barrels of oil every day—and that million barrels of oil a day would be—would make us less dependent on foreign sources of energy. Thanks to technology, we can reach ANWR's oil with almost no impact on the land or local wildlife. To make America less dependent, Congress needs to pass a pro-growth, pro-jobs, pro-environment development of ANWR. It makes sense. It is an important part of a comprehensive strategy.¹⁶

Think about it for a moment. The area the president wants to drill in Alaska is about the size of a postage stamp on a football field—the same footprint of two thousand acres on nineteen million acres, only about 0.01 percent (one one-hundredth of 1 percent) of the total area in the Alaska National Wildlife Reserve. Still, environmentalists fight a battle to the death to prevent any oil exploration in ANWR. They argue that even if the production from ANWR reaches one million barrels a day by 2010, that would only put a dent in our continuing dependency on foreign oil. They argue that “the tiny fraction of U.S. imports potentially accounted for by ANWR would only grow smaller with each passing year.”¹⁷

The environmental lobby insists upon negative thinking. Why not look at the marginal increase in U.S. production made by ANWR as a positive, a step in the direction away from depending on exports? What if oil-production technology has advanced to the point where the environment remains protected by oil companies operating with a goal to protect the environment? What if the ANWR is only a small indication of the total quantity of oil available in Alaska? Ironically, there might be a huge quantity of oil under Alaska. That may well be the underlying but unspoken reason environmentalists argue so hard to prevent any oil exploration in Alaska. The underlying objective of the radicals sometimes seems as if

their goal is to stop all oil production in the United States, maybe even worldwide, rather than encourage oil exploration to proceed under environmentally responsible preconditions.

Advocates of conservation tend to focus on one side of the argument: we must use less oil. They refuse to consider the other side of the equation: we must find more oil. We could start by allowing oil companies to explore and develop areas where we know there is more oil, namely offshore and in Alaska. Then, if the argument presented in this book is correct and oil is truly an abiotic product, we might find extensive oil still available to us yet on the continental United States—if only we were to explore deeper, not simply looking for oil where we find source rocks in sedimentary soil relatively near the surface. Who knows how much oil lies beneath the large wells we have already drilled out?

Conservationists just want to prolong what they see as inevitable. Beginning with a fossil-fuel orientation, conservationists are locked into peak-production thinking: since there only ever was a finite quantity of fossil fuel, sooner or later we have to find and use up whatever quantity of oil there is. Conservationists want us to ration out what is available so it lasts longer. But that isn't the conservationists' real point. Deep down, they believe we use too much carbon-based fuel. In this sense, the underlying agenda of the conservationists ends up agreeing with the radical environmentalists. Conservationists are calling for government intervention in markets, one way or another. At a minimum, the addition of tax incentives in legislation to promote the development and use of alternative fuels is an agenda conservationists can be counted on to support.

The idea of rationing out what is seen as a diminishing supply of oil reflects no serious understanding of markets. If we continue to use oil at our current pace, and we start running out of oil, then the price should go even higher. At higher prices, the market itself will force conservation and the pursuit of alternative fuels. From a market perspective, the problem right now is that oil is still cheap. At this cost, why bother conserving? Alternatives that might deliver substantial energy, such as nuclear power, are still expensive, even when oil reaches more than sixty dollars a barrel. When and if the price of oil gets sufficiently high, nuclear alternatives are

going to start making sense economically. Until then, conservationists can preach to us all they want. Yet if the market forces are going in a different direction, we should not expect many people to be listening.

Moreover, despite decades of admonitions that we are running out of oil, we must point out once again that today the world has more proven reserves of oil than ever before in history. We return to ask why anyone listens to environmentalists or conservationists when their fundamental premises continue to be undermined by empirical evidence to the contrary? Maybe propaganda theorists do have the answer. When we do not think critically, emotional arguments sound persuasive, especially if the arguments are repeated often enough and firmly enough. Environmentalists and conservationists always present their arguments as truths only an idiot would disagree with, regardless of the evidence to the contrary. Proof of assertions presented as propaganda is not required unless the people listening continue to reason logically and demand evidence.

MOST ALTERNATIVE FUELS DON'T PRODUCE ENOUGH ENERGY

For decades conservationists implored us to utilize alternatives to carbon-based fuel—everything from windmills to solar cells to hydrogen-powered automobile engines are pushed as solutions. Billions of dollars in federal taxpayer revenue have been wasted by providing economic incentives to pursue energy alternatives. To date, the sad result is that none of these alternatives has taken hold with the consuming public. None of the fuel alternatives has successfully competed with hydrocarbon fuels, except on a small scale and only with massive tax incentives. Hydrocarbon fuels remain more commonly available, more convenient to use, and still reasonably cheaper in price than anything else. Let's review the alternative fuel landscape.

WINDMILLS KILL BIRDS

At first consideration, windmills should be an attractive alternative energy technology. Windmills throw off no carbon dioxide, and the wind is

free. The problem is that large quantities of windmills are needed to produce electricity on a commercially viable basis. The windmills are unattractive, and they take up a lot of land. Windmills don't operate when there is no wind. Moreover, they kill birds.

Windmill farms sprang up all over California during the last twenty years, a phenomenon driven largely by a myriad of tax-incentive schemes. Few places in the country have been more productive in using windmill technology than Altamont, California, a stretch of rolling hills about fifty miles east of San Francisco. The more than five thousand windmills that line the hilltops of Altamont Pass generate some 820 million kilowatt hours of pollution-free electricity annually, enough to power 120,000 homes a year.¹⁸

The downside is that the windmills have become a "death trap for thousands of birds that get chopped up in fast-rotating turbine blades as they fly through or hunt for prey or fly on migration through the mountainous region between the San Francisco Bay area and the San Joaquin Valley."¹⁹ Experts estimate that as many as forty-seven hundred birds are killed each year in the fifty square miles that make up the Altamont Pass Wind Resource Area. The dead birds include as many as thirteen hundred federally protected raptors, including burrowing owls, red-tailed hawks, and even golden eagles, according to a study completed last year by the California Energy Commission. Ironically, with so many endangered birds being killed, the "pollution-free" Altamont Pass windmills became an environmental nightmare.

Instead of ending the windmill experiment, the Altamont County supervisors came up with a different solution: they changed the regulations. In July 2005 the county supervisors ruled to phase in a new generation of windmill turbines designed to spin higher, hopefully outside the birds' flight plan. To meet these requirements, the operating windmill companies will be required to spend an estimated \$540 million over the next thirteen years to upgrade the old windmills.²⁰

The supervisors also mandated moving the windmills to areas that are considered out of the more prolific raptor breeding areas and out of the middle of the major raptor migratory flight paths. Over the last two

decades the current windmills have probably killed twenty-six thousand raptors. Providing conventional electricity to the homes in the Altamont Pass area would probably have been a cheaper solution to the bird-kill problem, but then that solution would not have met legislative mandates to utilize alternative energies, regardless of their economic efficiency.

Windmill technology in California has had a checkered history. First introduced when gasoline prices were high during the Carter administration, windmills were encouraged by federal and California state tax breaks that only covered the construction of the windmills. Tax incentives were never consistent or strong enough for maintaining the windmills after they were built. So the craze to put up windmills led to "tax scheme" investing by many who had no serious long-term interest in the technology. When the windmills broke down, many were simply abandoned.²¹ Driving along California highways today you can see eerie landscapes of broken-down windmill farms consisting of towering structures that may originally have cost hundreds of thousands of dollars to construct and now are towering testimonials to a now-abandoned alternative fuel technology.

Denmark has been the most enthusiastic country in the world in terms of adopting windmill technology. Estimates claim as much as 20 percent of Denmark's overall electricity needs are fueled by windmills. Still, the Danish government has to pay some \$300 million a year in subsidies to keep the windmill industry going.²² Without the subsidies, many of the windmills in Denmark would go the way of the California windmills. The Danes have advanced the technology, learning to produce lighter, less expensive windmills that can generate more electricity than the 1970s models. Yet even in Denmark, the windmills can be a noisy eyesore that kills birds.

One of the major downfalls to windmill technology is simply the amount of land that has to be devoted to windmills to generate any large amount of electricity. One estimate examined how large an area would have to be devoted to windmill technology if New York City were to abandon coal and natural gas to generate 60 percent of the city's needs for electricity. The answer was 10.6 square miles, an area larger than

southern Manhattan, from the tip of the island through Greenwich Village. It would have to hold some sixty-eight hundred turbine windmills, each capable of generating 1.5 megawatts of electricity. Yet we should be encouraged. To deliver the same amount of electricity with solar power would take an area of seventy-four square miles, an area stretching from about Fifty-ninth Street north to the tip of the island in a square block that would reach across to New Jersey on the west and include the Bronx on the east. The installation would involve more than 145 million solar panels, each delivering 175 watts of power. By comparison, that quantity of electricity would take four nuclear reactors capable of delivering 1,000 megawatts each, with each plant taking up about two square miles.²³

Still, when the wind does not blow, windmill technology is no more effective than a sailboat in a race caught in a doldrums. A giant modern windmill, standing about 150 meters (about 500 feet) high, with a blade diameter of about 100 meters (328 feet, slightly more than one football field), can generate about ten megawatts of electricity when the wind blows hard, about ten miles per hour. But when the wind blows moderately, say at one mile per hour, the windmill hardly produces any electricity at all, not even enough to power a dishwasher. Even in the windiest locations in the world, windmills rarely produce significant electricity more than half the time. Electricity in large quantities is hard, if not impossible, to store. Electricity when generated has to be delivered. Windmills, when they are working, can end up generating excess electricity. But when the wind is not blowing, windmills are next to useless. Because of this deficiency, windmill systems need conventional hydrocarbon-fuel backup, unless they are applied to very small applications (fueling an individual home, for instance) and don't have to work all the time.²⁴

HYDROGEN CARS ARE NOT YET PRACTICAL

In July 2005 General Motors announced the results of a nationwide research study it had funded to investigate public perceptions of U.S. energy policy. The results indicated that energy security should be a top priority, with respondents voicing strong support for a "moon shot" effort to de-

velop a hydrogen economy. Presenting the survey to the automotive press, GM Vice President for Environment and Energy Elizabeth Lowery lamented how little credit GM gets from the public for the investment the company is making to pursue hydrogen energy alternatives: "But while the survey shows that Americans support the same goals that are at the heart of GM's overall advanced technology strategy for improving efficiency, it's troubling what little credit we're getting."²⁵

That major U.S. automotive manufacturers even have vice presidents for energy and environment shows that the car companies have heard the drumbeat from the political Left. Hydrogen cars are the current alternative energy fad. Why not? Hydrogen is abundant. Water molecules consist of one hydrogen atom bound with two oxygen atoms. Hydrogen is a powerful fuel, and burning it in an automobile engine throws off water as a by-product, not carbon dioxide. There are, however, several major problems. Releasing hydrogen from water requires the expenditure of considerable hydrocarbon energy to accomplish the task, so much so that burning the hydrogen in a car may not be a net savings in carbon-dioxide emissions. Moreover, with current technology, hydrogen is difficult to compress, and the resulting hydrogen fuel tank adds an enormous additional weight to the car.

Pressurized storage tanks can hold compressed hydrogen at around one hundred times the atmospheric pressure (1500 PSI, pounds per square inch). To match the energy efficiency of a fifteen-gallon gasoline tank would take around sixty high-pressure storage tanks (each tank holding about twenty-nine cubic feet of highly compressed hydrogen). Hydrogen storage tanks must be massive simply to withstand the pressure. And they weigh as much as one hundred pounds empty; only about a quarter of a pound in weight is added by the compressed hydrogen when the tanks are filled. Sixty of these tanks would add six thousand pounds to the twenty-eight hundred pounds the average American car now weighs. The vehicle would have to be about three times the average current size of automobiles, just to hold the hydrogen tanks.

So if you are getting ready to imagine driving what amounts to a large trailer weighing about nine thousand pounds, consider the safety risk. If

a tank gets damaged in an accident, the pressurized hydrogen would rush out with a strong and potentially dangerous force. Anybody who has let go of a balloon only to see it fly around as the compressed air escapes should get the idea. Now imagine the extreme hazard of a nine-thousand-pound vehicle the size of a trailer having a major collision on a highway, with the resulting explosion of dozens of compression tanks jetting out hydrogen and flying around dangerously loose.²⁶

When hydrogen cars are as easy to use and as cheap as gasoline-fueled cars, then we won't need surveys to show us what the public supports. Up until that point, the surveys and press releases from automobile manufacturers look more like public relations than advertising. Granted, car manufacturers want the public to understand that they are exploring energy alternatives. If any government tax breaks are forthcoming, car manufacturers want to be positioned in the receiving line. Besides, all good corporate citizens want ready answers to counter the commentary of the industry's inevitable conservationist and environmentalist critics. Burning hydrogen in an internal compression engine sounds like a good idea, but don't expect to be driving one anytime soon.

ETHANOL IS NOT FUEL EFFICIENT

The 2005 federal energy bill allocated approximately \$6 billion in federal funds to assist in the development of ethanol plants around the country. Ethanol is a "biofuel," a gasoline substitute made from plants, generally corn. Proponents argue for ethanol both to reduce the emissions of carbon dioxide caused by burning hydrocarbon fuels and to provide substitutes for gasoline, addressing fears that we are running out of oil. A \$20-billion market worldwide has developed around the production and marketing of ethanol.²⁷ Drug companies as well as major oil companies are involved as producers of ethanol and, in the case of the oil companies, as distributors. Ethanol can be mixed with gasoline or used as a complete substitute for gasoline, provided the internal combustion engine is adapted to burn ethanol-only fuel. Ethanol is clearly a boon to corn farmers. Environmentalists are also enthusiastic at finding a biological substitute for oil that is both cleaner and renewable. Sounds like a

perfect, sustainable substitute for hydrocarbon fuel, at least as far as transportation is concerned. What's the downside?

For starters, the production of ethanol may burn up more hydrocarbon fuel than it saves. Consider the different uses of hydrocarbon fuels needed to convert corn into ethanol. An analysis conducted by David Pimentel, professor of ecology and agriculture at Cornell University, and Tad Patzek, professor of civil and environmental engineering at the University of California, Berkeley, came to this conclusion by taking into account the production of pesticides and fertilizers needed to grow the crops, the running of farm machinery and irrigation, the grounding and transporting the crop, and the fermenting and distilling of ethanol from the water mix. Their conclusions were that corn requires 29 percent more hydrocarbon energy than the fuel produced; switch grass requires 45 percent more, and wood biomass requires 57 percent more. The same conclusions held for plants that produce biodiesel fuel from soybeans (27 percent more hydrocarbon fuel used than produced) or sunflowers (118 percent more hydrocarbon fuel used). The analysis did not factor in the additional costs in federal and state subsidies that are passed on to consumers in the form of taxes.

"The United States desperately needs a liquid fuel replacement for oil in the near future," Pimentel said, "but producing ethanol or biodiesel from plant biomass is going down the wrong road, because you use more energy to produce these fuels than you get out from the combustion of these products." He added: "The government spends more than \$3 billion a year to subsidize ethanol production when it does not provide a net energy balance or gain, is not a renewable energy source or an economic fuel. Further, its production and use contribute to air, water and soil pollution and global warming." Pimentel had nothing positive to say about the endeavor: "Ethanol production requires large fossil energy input, and therefore, it is contributing to oil and natural gas imports and U.S. deficits." He further added that the vast majority of tax benefits and subsidies went not to farmers but to large ethanol-producing corporations.²⁸

Blending ethanol with gasoline also increases the emission of nitrogen oxide and other smog-forming chemicals. If you modify your car's engine

to take an ethanol blend, you may violate the car's warranty so as to remove any future engine problems from coverage. Finally, a 10 percent ethanol-blend in gasoline reduces gas mileage by 3 to 5 percent; a 20 percent blend reduces gas mileage 6 to 10 percent. Higher corn prices resulting from government subsidies to support corn production increase the cost of corn grain supplied to beef and poultry producers, adding an estimated \$1 billion to the cost of beef production annually. Still, ethanol is a biological product and carbon dioxide emissions are reduced, enough reason for global-warming enthusiasts to support government subsidies regardless of the efficiency of the fuel or the resulting economic side effects.

NUCLEAR POWER ON THE UPSURGE

In the 1970s the United States led the world in nuclear power plant technology. That was brought to an abrupt halt by the accident that began on March 28, 1979, at Three Mile Island. The partial core meltdown that occurred in that reactor also began a partial meltdown for the nuclear power industry in the United States. The second shoe fell on April 25, 1986, when the Russian nuclear power plant at Chernobyl exploded, throwing high radiation into an area within twenty miles of the plant. The American public never fully recovered from these images. The impact was reinforced by a politically motivated movie whose timing could not have been worse for the nuclear power industry. *The China Syndrome* was released just prior to the Three Mile Island accident and was playing in theaters as the public was reeling from the shock of the disaster.

Still, the nuclear power industry has continued, though at a slowed pace. Today 103 nuclear power plants operate in 31 states, generating approximately 20 percent of the nation's electricity. Surprisingly, Vermont—one of the country's most politically liberal states—leads the list with 73.7 percent of its electricity powered by nuclear plants. Nuclear power supplies more than 25 percent of the electricity in 18 states. South Carolina follows Vermont on the list (with 54.5 percent of the state's electricity produced by nuclear power plants). Other leading nuclear power states include Connecticut (54.4 percent), New Jersey (51.9 percent), Illinois (50.1 percent), and New Hampshire (43.0 percent).²⁹

The construction of nuclear power plants requires considerable public funding to be feasible. Still, nuclear power has several major advantages. Nuclear power reactors are in the fourth generation of development. The newer-generation reactors have simpler, safer designs that reduce capital cost and use less fuel to obtain equivalent power output.³⁰ Today more than thirty countries are operating nuclear power reactors, generating approximately 20 percent of the world's electricity. In 2000 nuclear energy produced as much electricity as was produced worldwide in 1961 by all energy sources.³¹

The 435 nuclear reactors operating worldwide use some 180 million pounds of uranium annually. Currently only about 100 million pounds of uranium are being mined each year. With growing demand, more than 8,500 mining claim permits were filed in the first six months of 2005 in eight uranium-rich counties in Colorado and Utah. The Department of Energy has decided to put 13,500 acres of uranium-laced Colorado lands up for bid in 2006, the first time this has happened since 1974. Some 75 million pounds of uranium are estimated to remain in the Colorado plateau. All this activity evidences a move to reexamine the long-term viability of nuclear power as an alternative to burning hydrocarbon fuels.³² Worldwide, resources of uranium appear abundant. Moreover, breeder reactors actually generate plutonium, which can itself be used as fuel.

Even when the cost of carbon-based fuel makes nuclear energy economically attractive, we should not expect an easy acceptance of expanding nuclear energy. Environmentalists hate nuclear energy worse than they hate the burning of fossil fuels. When nuclear power gains ground, we may not have as many global-warming arguments to face, but we are certain to hear a lot more about the environmental hazards involved in the disposal of spent nuclear fuel. A whole risk of hazards, from cancer to radiation dangers to spent-fuel disposal, will certainly return to the center once environmentalists begin to fear that the move to develop more nuclear power plants is under way. Ironically, environmentalists may regret that they pushed global warming so hard, especially if the ultimate result is that the public returns to favoring the construction of more nuclear power plants.

Technological innovations and inventions that truly succeed have market-driven advantages that propel them. Government will undoubtedly continue to mandate the exploration and development of dozens of otherwise economically untenable alternatives to carbon-based fuel. Someday we may even see nuclear batteries capable of powering everything from flashlights to automobiles. The serious innovations, however, will only take hold when they deliver power competitive with carbon-based alternatives at a price that is the same or cheaper.

6

THE GROWING U.S. DEPENDENCE ON FOREIGN OIL

Large amounts of oil and natural gas lay beneath our land and off our shores, untouched because the present administration seems to believe the American people would rather see more regulation, taxes and controls than more energy.

Ronald Reagan, July 18, 1980

EXPERTS ESTIMATE THAT AMERICANS consume more than 25 percent of the world's oil but have control of less than 3 percent of its proven supplies. This unbalanced pattern of consumption makes it possible for foreign governments, corrupt political leaders, terrorist organizations, and oil companies to hold the economy and the citizens of the United States in a virtual stranglehold. There is no greater proof of this than the direct relationship between skyrocketing gas prices and the explosion of wealth among those who control the world's supply of oil.

FIFTY YEARS FROM INDEPENDENCE TO DEPENDENCE

During World War II the United States derived a great strategic advantage by being able to produce all the oil it needed to fight a war across both the Atlantic and Pacific Oceans. We faced two foes, Nazi Germany

and Imperial Japan, both of whom were dependent on other nations for the oil they needed to run their industrial societies and to wage war.

Daniel Yergin, in his epic study of the oil industry, stressed how important America's oil independence was to our World War II victory:

If there was a single resource that was shaping the military strategy of the Axis powers, it was oil. If there was a single resource that could defeat them, that, too, was oil. And as the United States almost single-handedly fueled the entire Allied war effort, putting an unprecedented drain on its resource, a fear of shortage began to grow. It was another of those periods of pessimism about the American oil position, similar to that at the end of the First World War, but etched, because of this war, in much greater urgency. What would a pervasive and lasting shortage mean for America's security and for its future?¹

As the war progressed, planners within the Roosevelt administration became concerned that the rate at which new oil discoveries were being made in the United States was slowing down. Secretary of the Interior Harold Ickes wrote a disturbing article titled "We're Running Out of Oil!" which was published in December 1943, before the tide of war had turned in the Allies' favor. If America was destined to become a net importer of oil, experts knew that our attention would turn to the Middle East. Herbert Feis, an economic adviser to the State Department, understood America's coming oil predicament: "In all surveys of the situation, the pencil came to an awed pause at one point and place—the Middle East."²

Could the United States forever remain strategically independent if it was forced to import the bulk of the oil on which the economy and military strength depended? This was the question strategic planners were asking as World War II approached a successful conclusion. Today we are faced with the necessity to answer that question.

WHERE DO OUR IMPORTS COME FROM?

The United States consumes approximately 21 million barrels of oil a

day. Each day we import some 12 million barrels of oil, about 60 percent of all the oil we consume. About 20 percent of our oil imports come from Persian Gulf countries, averaging about 2.4 million barrels a day. At \$50 a barrel, this means we are sending more than \$600 million a day overseas for oil, of which \$120 million a day goes to Persian Gulf countries. At \$60 a barrel, we are sending \$720 million a day overseas for oil, of which \$144 million goes to the Persian Gulf. With oil at \$60 a barrel, we are sending overseas nearly a quarter of a trillion dollars each year just to buy oil.

We have never before in our history experienced this massive a transfer of our national wealth overseas. The political ramifications are enormous as we bleed dollars to the world so we can buy oil. In 2005 our largest amount of oil was imported from Mexico (approximately 1.75 million barrels a day), followed by Canada (about 1.72 million barrels a day), and Saudi Arabia (1.4 million barrels a day). The next two major importers on the list are Venezuela (1.3 million) and Nigeria (1.1 million).³

As Americans, we have traditionally focused on domestic politics. American soldiers have died in many foreign lands that many Americans could not readily find on the globe. Avoiding foreign entanglements has been an American watchword since George Washington published his Farewell Address on September 17, 1796. Whether we realize it or not, this situation has changed. We can no longer afford to ignore our oil-importing partners. Their internal politics can directly affect us by their willingness to open up or shut down the oil spigot. Today we have to have foreign entanglements because we have to import foreign oil. The trend of that dependency is increasing, not decreasing. If nothing is done to reverse this tendency, we will be importing 70 percent of the oil we use, perhaps as soon as 2010.

With so much of our imported oil coming from the Persian Gulf, the United States is constantly attuned to the ever-present potential for turmoil in that region. The Iranian Islamic Republic has continued to press forward with a clandestine nuclear-weapons program. The clerics ruling Iran have exported terrorism for more than a quarter century, funding Hezbollah in Lebanon and working hand-in-hand with al-Qaeda to kill

Israelis and Americans. The prospect of a nuclear-armed Iran providing a nuclear umbrella to cover its terrorist activities is frightening along many dimensions. One only has to think back to the 1980s tanker-war Iran fought against Iraq in the Persian Gulf to realize how quickly Iran could shut down oil transport through the Straits of Hormuz, quickly placing a stranglehold on the flow of oil worldwide. The minute the mullahs resume enriching uranium, we should expect oil prices to spike. Any move the Iranians make toward nuclear-weapons development will have an immediate negative impact on worldwide oil prices as markets price the commodity with an eye to the risk of a new wave of terrorism or even nuclear blackmail.

We have to realize that American oil policy has developed Western Hemisphere partners, including Canada, Mexico, and Venezuela, in part to reduce the risk of political or military instability in the Middle East. As long as the conflict continues between the Israelis and the Palestinians, the potential of terrorism or war in the region remains an alarming and ever-present danger. To keep downward price pressure on world oil markets, America must develop strong sources of oil supply elsewhere. To protect against the possible disruption of oil flow from the Middle East, we have no choice but to cultivate alternative oil-importing partners, even if there are serious political complications and risks given the relatively small selection of available international alternatives.

ILLEGAL IMMIGRANTS FLOOD ACROSS THE MEXICAN BORDER

Our top-fifteen oil-importing countries include several from south of the border. In addition to Mexico, we are importing oil from Brazil, Colombia, and Venezuela in South America and Ecuador in Central America. Understanding this lends a new perspective to the immigration invasion we are currently experiencing from our Spanish- and Portuguese-speaking neighbors. As of 2004 some 13.9 million illegal immigrants are estimated to be within our borders, including 4.7 million minor children who are U.S. citizens by birth, even though they are living in “mixed sta-

tus" families where their parents are illegal immigrants.⁴ More than half of the illegal immigrants entering the United States come from Mexico (59 percent), an additional 25 percent come from other Latin countries, including El Salvador, Ecuador, and Colombia.

The draw for illegal immigrants typically begins with economics—jobs and economic opportunity. Then the flow continues, drawn on by families wanting to reunite within the United States. The Center for Immigration Studies in Washington DC gives an excellent summary of the dynamics in play:

The two "magnets" which attract illegal aliens are jobs and family connections. They typical Mexican worker earns one-tenth his American counterpart, and numerous American businesses are willing to hire cheap, compliant labor from abroad; such businesses are seldom punished because our country lacks a viable system to verify new hires' work eligibility. In addition, communities of recently arrived legal immigrants help create immigration networks used by illegal aliens and serve as incubators for illegal immigration, providing jobs, housing, and entrée to America for illegal-alien relatives and fellow countrymen.⁵

Nearly one-quarter of all illegal immigrants settle in California, followed by Texas (14 percent), Florida (9 percent), and New York (7 percent). Growing illegal immigrant populations are forming in Arizona, Illinois, New Jersey, and North Carolina—part of a trend whereby foreign-born communities have grown from a relatively small presence simply by families and relatives communicating, making it easier for additional family members to join them in the United States.⁶

Once here, illegal immigrants are very difficult to deport. Communities of Spanish-speaking foreigners are easy to recognize, even in states such as Illinois and North Carolina. In a state like New Jersey, some urban centers, such as Elizabeth, Morristown, Patterson, and Union City, end up with many thousands of Spanish-speaking residents. Still, authorities face a dilemma. Roundups to examine immigration papers are certain to arouse the ire of civil liberties groups such as the ACLU. Lawsuits would

be certain to block any major law-enforcement attempt to identify and deport large numbers of illegal immigrants in such towns. Then, too, family situations are complex. Could authorities deport the parents and leave the children in the United States? Any children born here would be U.S. citizens and have a right to stay, even if their parents do not. Serious practical problems of this nature make law-enforcement efforts to deport illegal immigrants nearly impossible once the individuals are here and have joined or formed families.

Since 1990 more than 75 percent of the immigrants entering the United States from Mexico have been illegal, numbering somewhere between 400,000 to 485,000 illegal immigrants from Mexico annually. While most of these Mexican illegal immigrants stay in Arizona, California, and Texas, an increasing number are dispersing to other Spanish-speaking population centers throughout the country. In 2005 the U.S. Border Patrol reports an increase in OTM (Other Than Mexican) detainees who are illegally crossing the border, a number growing to an estimated 150,000 annually, mostly coming from Brazil and Central America. Mixed into the OTM total was a small but dangerous group not from Brazil, Central America, or Mexico, but from so-called countries of concern that may include countries with terrorist connections.

The U.S. government has not been able to stop this flood of immigrants from Mexico, as evidenced by the citizen group Minuteman Civil Defense Corps (<http://www.minutemanhq.com/>). The Minuteman group has been assisting in the capture and arrest of illegal immigrants attempting to cross a twenty-three-mile stretch of Arizona's border with Mexico. In August 2005 the group claimed it has prevented more than sixty thousand cases of illegal immigration from Mexico, at least 20 percent of whom had criminal records.⁷ Mixed in with the illegal immigrants coming from Mexico is an increasing number from other countries, including Middle Eastern countries with terrorist connections. U.S. Border Patrol officers are overwhelmed; they lack sufficient resources and do not have the determined support of the federal government.

Typically, Mexicans caught at the border are only turned back, with no one knowing if or when they might make another attempt to cross

later. Even more serious, many OTMs captured by the Border Patrol are not detained, simply because imprisonment facilities are already overcrowded. OTMs are given a court summons and told to appear in court in three months; more than 85 percent never show up. T. J. Bonner, president of the National Border Patrol Council, an organization that represents more than nine thousand agents, pointed out the ridiculous nature of what amounts to a catch-and-release policy that he believes has allowed some 465,000 non-Mexican illegal immigrants to enter the United States: "It's an insane policy which encourages OTMs to come into the country illegally, and we shouldn't be shocked that they are coming in record numbers." Many OTMs actually flag down agents or walk up to them and surrender, knowing they will be released. "The word is out. They know that as soon as they are caught, they will be free to roam at will."⁸

Why doesn't Washington have more resolve to stem the flood of immigration coming in from Mexico? Oil imports are a ready first answer. The U.S. government finds it difficult to take a systematic, hard look at the nearly free flow of illegal immigrants coming across our southern border.⁹ Instead, we have been determined to expand free-trade areas by adding the Central American Free Trade Association (CAFTA) to the previous NAFTA agreement we signed with Mexico and Canada, yet another of our oil-importing partners. The 2000 U.S. Census recorded the Hispanic population of the United States at more than thirty-five million persons, nearly a 58 percent increase since the 1990 Census. Spanish today is virtually America's "unofficial" language. This trend shows no sign of stopping or even slowing.

Mexico has the third-largest proven reservoirs of crude oil in the Western Hemisphere, behind Venezuela and the United States. The United States imports virtually all the oil Mexico exports. As a hedge against instability in the Middle East, the U.S. government has to calculate our oil needs when considering any steps we take regarding Mexico or illegal immigrants. With such a large number of illegal immigrants coming from Mexico, any crackdown on illegal immigration would have an immediate impact on Mexico.

Mexican illegal immigrants send an enormous amount of money

back to their families. Illegal immigrants earn some \$60 billion working illegally in the United States, of which some \$17 billion a year is sent back home to their families in Mexico. Facilitated by U.S. banks and payment systems such as Western Union, these “remittance” payments sent back home by Mexicans working illegally in the United States rival the oil industry itself as Mexico’s number-one revenue producer.

Family is extremely important in the Spanish culture. The ties back home continue long after a family member has emigrated to the United States. Whether the immigrant is legal or illegal, the same cultural influences keep thoughts of home foremost in mind. Plans are made to bring wives, children, parents, and relatives to the United States, working with the first family member to make it here as the person who establishes a “beachhead.” The flow of money back home never stops, if only because there are always family members who cannot for one reason or another come here, or maybe just not yet.

Attacking the remittance industry by cracking down on illegal immigration would deal a severe blow to Mexico’s economy. As mentioned earlier, the U.S. and Mexican economies are increasingly interdependent, even if the risk we take is to allow our southern border to be an immigration sieve across which flows not only illegal Mexican immigrants but very likely terrorists using the cover of Mexico to conceal their illegal entry from terror-supporting rogue states. Mexico’s gross domestic product depends on America’s allowing large numbers of illegal aliens to come here and stay here so they can get jobs in the United States and send money home.

VENEZUELA, LEFTIST REVOLUTIONARIES, AND NARCO-TRAFFICKERS

Venezuela has the Western Hemisphere’s largest proven reserves of oil, nearly 78 billion barrels as of January 2004. As we saw above, the United States gets about 10 percent of its imported oil from Venezuela; in turn, about 60 percent of all Venezuela’s oil exports come directly to the United States, not counting the crude oil Venezuela sends to the Caribbean to be

refined there and then reexported to the United States. This flow of oil occurs despite the political enmity that has developed between the United States and the extreme leftist socialistic government of Venezuela's president Hugo Chavez. The economic benefit to Venezuela is obvious. With oil at \$50 a barrel, Chavez takes in some \$65 million a day for the 1.3 million barrels of oil shipped to the United States; at \$60 a barrel, Venezuela daily rakes in \$78 million in petrodollars.

What does Chavez do with this revenue? Reports suggest that he is financing the new Bolivarian army created by Daniel Ortega, who is still the head of the communist-sympathizing Sandinista Party. The Bolivarian army is supposedly constituted of soldiers from throughout Latin America uniting to resist the spread of American imperialism—what else? Chavez sports a Fidel Castro-style uniform. At the same time, Chavez reportedly offers refuge to the Colombian FARC (Revolutionary Armed Forces of Colombia), narco-terrorists who have been at war with Alvaro Uribe, the pro-American president of Colombia, yet another of America's top-fifteen sources of imported oil.¹⁰ So importing oil from Venezuela and Colombia puts the United States at the center of Latin America's continuing struggle with leftist revolutionaries and narco-traffickers. Sarcastically, we could comment, "Why not? We need the oil."

But seriously, we face a nightmare in contemplating a Castro-Chavez-Ortega Axis of Evil combining forces with narco-terrorists and sending foot soldiers through Latin America and into the United States. Socialist political activists, criminal narco-traffickers, Latin American terrorists, and who knows how many other criminals could easily get lost in the growing river of OTM illegal aliens mixing in with the thousands of Mexican illegal immigrants who have been crossing our borders every day for some fifteen years or more. This is in addition to the destabilization of Latin America and South American countries that Chavez is empowered to continue engineering with ample financing available from our petrodollar windfall. Our purchase of oil from Venezuela finances the demise of democracy in our hemisphere and threatens us at home by opening the back door to Spanish-speaking terrorists and drug dealers.

In February 2005 reports circulated that Chavez was using his oil

riches to buy weapons such as Kalashnikov rifles and attack helicopters from the Russians. Also reported were discussions about a possible \$4 billion purchase of MiG jets from Russia.¹¹ But can the administration in Washington afford to take too hard a line against Chavez? Obviously not, unless we want to threaten the continued flow of oil and lose yet another hedge against the potential of instability in the Middle East and any interruption that might result in the flow of oil from the Persian Gulf.

CANADA, THE NEXT SAUDI ARABIA?

Canada has quietly come from nowhere to become one of the America's leading sources of imported oil. Most Americans have no idea that Canada has become a major exporter of oil. Yet the reality is that Canada's oil reserves in the arctic bordering Alaska may well prove to be one of the world's richest untapped resources of oil and natural gas, with reserves rivaling even those of Saudi Arabia, the country everyone thinks of first when the subject of proven oil reserves is mentioned.

The United States and Canada have had political tensions for decades, tensions that became exacerbated as forces in Montreal pushed forward with their French separationist efforts. Also, since the Vietnam War, liberal forces in Canada have opposed U.S. war initiatives around the globe, often warmly welcoming Americans who sought political refuge in Canada as an alternative to serving in the U.S. military forces. With so much oil coming available in Canada, the United States may well find it increasingly necessary to come some considerable distance toward hearing out what are typically leftist Canadian political sentiments.

When we appreciate how much oil is involved, we begin to contemplate that the United States has placed Canada onto our oil-importer list under the radar to set the stage for what could well expand in the coming years into major trade partnerships. NAFTA, which included Canada as a signatory, could well be a first step toward a more comprehensive, though little announced, plan to expand into a Western Hemisphere free trade market. CAFTA is the next step forward toward a plan to ultimately form a Free Trade Area of the Americas (FTAA), ultimately designed to

include all countries in the Western Hemisphere—with the exception of Cuba. Even within the United States, any move toward FTAA is certain to be countered by strong political and economic opposition from many sides once the direction of the initiative is fully appreciated.

Yet what is at stake is a huge amount of oil and natural gas. Though most Americans know very little about Canada's potential to be a major oil supplier, the dimensions of the project are truly staggering. The Mackenzie Delta is in the extreme north of Canada's Northwest Territories, a large wilderness in the upper tier of Canadian provinces, above Alberta. The Mackenzie Delta turns out to be not only rich in natural gas but also contains a "huge but hard-to-tap supply of petroleum dispersed in underground gravel formations. These so-called oil sands hold petroleum reserves that are second in size only to Saudi Arabia's, and analysts say they could supply a large portion of U.S. energy needs for decades to come."¹²

The oil sands are rich in bitumen, a superheavy oil that has to be extracted by a process resembling strip mining. The scooped-out sand is then cooked at very high temperatures to extract oil from the sludge. Alternatively, steam can be pumped into the sands to dissolve the bitumen, a process that allows the oil to be pumped to the surface. Fortunately, the area already contains the natural gas that could fuel these complex processes. The thick oil extracted by these methods has to be refined to commercial grades of crude oil before it can be carried by pipeline to customers, most of which are in the western United States. Some two tons of sand have to be dug up and refined to make one forty-two-gallon barrel of oil.

Still, the Mackenzie Delta area is thought to contain 174 billion barrels of oil, which would place these reserves at second worldwide, only behind Saudi Arabia's 260 billion barrels of proven reserves. In contrast, Alaska's Arctic National Wildlife Refuge (ANWR) reserves, while also huge and largely untapped, holds only an estimated 10 billion barrels of reserves. Oil output from the Mackenzie Delta is expected "to reach 2 million barrels per day by 2010, rising to 3 million by 2020 and as much as 5 million for many decades to come."¹³

A \$6 billion Mackenzie Pipeline Project has been organized by a

group of major oil companies, including ConocoPhillips, Shell Canada, and ExxonMobil. The group plans to build a 1,220-kilometer pipeline (about 760 miles) connecting the Mackenzie Delta to the northern border of the United States. Initially, the pipeline would carry an estimated 800 million cubic feet per day of natural gas, a flow expected to grow quickly to 1.2 billion cubic feet per day. As the oil field is developed, the pipeline would be available to carry the oil into the United States through Montana.¹⁴

As might be expected, environmental groups have launched intense efforts to block the development of the Mackenzie Delta. Also, the Deh Cho First Nations, an Indian tribe of about forty-five hundred people who live in about 40 percent of the territory crossed by the pipeline's southern route, filed lawsuits to block the project. Elizabeth May, the executive director of the Sierra Club in Canada, issued a statement on April 15, 2005, expressing extreme concern that the pipeline project was about to begin: "This deal means that the sole function of the Mackenzie pipeline is to supply natural gas to extract oil from the Athabasca tar sands, the world's dirtiest source of oil. Canada could blow its chance of meeting its Kyoto targets if it allows tar sands productions of greenhouse gas emissions to increase from 17 megatonnes in 1990 to the projected 70 megatonnes in 2010. Tar sands projects would then represent the largest total single addition to Canada's greenhouse emissions, representing 9 percent of Canada's total in 2010."¹⁵ The Sierra Club went on to emphasize what it saw as the extreme environmental risks involved:

The Mackenzie Gas Project itself has important environmental issues including fragmentation of wilderness, loss of biodiversity, increased greenhouse gas emissions, reduction of boreal carbon sequestration capacity, and effects relating to permafrost melting and frost heaving. Once the gas starts to flow south, the 60 or more significant natural gas finds in the Mackenzie Valley and Delta, and Beaufort Sea will also likely be brought into production within 25 years. The conversion of Canada's largest, wildest watershed to yet another industrial landscape will then be well-advanced.¹⁶

At \$50 or \$60 a barrel, one million barrels a day in production generates the type of revenue Canada may find impossible to pass up. And the oil companies developing the area will undoubtedly be held to very tight standards of environmental concern. Still, barring any environmental disasters of an *Exxon Valdez* magnitude, the environmentalists are unlikely to win, not in the face of these economics.

Already a deal has been reached with the Deh Cho First Nations. On July 11, 2005, Indian and Northern Affairs Minister Andy Scott and Herb Norwegian, grand chief of the Indian nations, announced that an agreement had been reached with the Mackenzie Gas Project. In the agreement, Canada pledged a considerable range of consultation with the Indians regarding future energy development plans in their territory. Additionally, Canada promised \$15 million in economic development funding to assist the Indian nations in pursuing economic and business opportunities. Scott was enthusiastic about the future: "With this agreement, Canada's discussions with the Deh Cho First Nations on land, resources, and governance are back on track and will proceed with renewed vigour—and we in turn generate greater certainty in the Mackenzie Valley. We are committed to ensuring effective and meaningful participation in the Deh Cho in both the environmental assessment and regulatory review of the Mackenzie Gas Project."¹⁷ The Indians in turn agreed to drop all litigation to block the oil companies from proceeding.

The good news about the Mackenzie Delta energy resources is that once again we have strong evidence countering the "running out of oil" scare promoted by the fossil-fuel theorists and conservationists. The bad news may be that once again the United States is in a position of having to compromise national political agendas to meet the political objectives of yet another important oil importer. Even though Canada stretches across our longest border, few Americans have ever visited Canada and even fewer know much about Canada, other than perhaps to hear the Canadian national anthem played before a hockey or baseball game or at an international sporting event such as the Olympics.

Also, efforts to tighten border control to prevent illegal immigrants and drugs from crossing into the United States will be harder to achieve,

as is the case with Mexico, to the extent that our oil dependence on Canada increases. For the past decade U.S. drug authorities have identified Canada as a major entry point for high-grade marijuana and heroin, much of which originates in Asia. Drugs are driven across the border or transported by ship on the connecting waterways, especially over the Great Lakes. In some cases, individual entrepreneurs simply walk backpacks of the drugs across the border's hundreds of unguarded miles. Consider this statement from a 2001 National Drug Intelligence Center threat assessment produced by the U.S. Department of Justice:

The principal illicit substances smuggled into the United States through Canada are marijuana, heroin, and precursor chemicals. Canada increasingly is becoming a source country for high-grade marijuana, and organized Asian criminal groups as well as outlaw motorcycle gangs control facets of production and distribution. Higher purity heroin, primarily Southeast Asian, is transshipped through Canada to the United States where ethnic Chinese criminal groups operating on both sides of the border control distribution. Criminal groups divert precursor chemicals, which are currently unregulated in Canada, to facilitate their production of synthetic drugs, primarily methamphetamine, in the United States; however, regulations to address this are forthcoming.¹⁸

A 2004 threat assessment jointly published by U.S. and Canadian law-enforcement authorities made clear that drug trafficking across the Canadian border remains a problem: "Despite our best efforts, drug trafficking still occurs in significant quantities in both directions across the border. The principal illicit substances smuggled across our shared border are marijuana, cocaine, precursor chemicals and steroids."¹⁹ The United States' border with Canada is nearly twice as long as the border with Mexico. Even today, much of the border is undeveloped and unwatched.

Despite regulations, the economics of the drug trade has its own compelling logic. Moreover, in a post 9-11 world, an open border across which ample supplies of drugs are transported is an invitation to terrorists seeking to slip unnoticed into the United States. This problem is intensified

when we realize that Canada has immigration and visa regulations that in many instances are more relaxed than similar laws in the United States, especially involving nations where Canada has better relations, largely because we perceive the foreign nation involved as constituting a terrorism risk whereas Canada does not. Foreign nationalists who may not be able to meet Homeland Security objections to their entry directly into the United States may be able to enter more easily into Canada. Once in Canada, potential terrorists can assimilate into the population in an effort to "get lost" in a local community, a first step toward a planned illegal crossing of the U.S.-Canadian border.

In concluding this section, we have to wonder once again just how much oil and natural gas there is in Alaska. Now that we see these huge reserves under the Mackenzie Delta, we have to wonder if a huge underground reservoir stretches from ANWR through Canada's Yukon Territory across to the Northwest Territories, just like we have seen in the Middle East, stretching from Saudi Arabia through Iraq and Iran and into Kazakhstan? Environmentalists will fight hard to keep exploration out of the northern wilderness territories. We may yet find plentiful supplies of undiscovered oil right here in Alaska and Northwest Canada, possibly enough to supply our needs for another hundred years, even allowing for considerable increased usage.

U.S. OIL SUPPLY HELD HOSTAGE TO FOREIGN POLITICAL INSTABILITY

King Fahd of Saudi Arabia died on July 31, 2005. In truth, he had been incapacitated since suffering a stroke in 1995. His half-brother, Crown Prince Abdullah, who had been de facto ruler since 1995, officially took over control of Saudi Arabia. None of this was unexpected. Still, on the day after King Fahd's death, crude oil futures hit a new record high of \$62.30 on the New York Mercantile Exchange. This marked a 40 percent increase in the price of oil during 2005 and a doubling in price over the previous two years. The hint of instability was enough to send oil markets higher, despite the low probability that King Fahd's death would

change anything. Abdullah has been controlling Saudi oil markets since he effectively took over in 1995. What was more disconcerting about the price movement was how skittish oil markets are over any change in the Middle East. Abdullah himself is eighty-two years-old. Serious questions about instability may rise to the surface once he passes away.

Divisions within the ruling family could easily emerge in the next succession opportunity. The House of Saud quickly named Crown Prince Sultan as next in line to accede to the throne. Future succession is more problematic. Saudi Arabia faces severe challenges in attempting to balance the need to reform the country in a more democratic manner that is open to the growing ranks of emerging younger Saudi professionals. Some 60 percent of the Saudi population is eighteen years old or younger.²⁰ At the same time, the country maintains a deeply conservative Muslim heritage, one dominated by Wahhabism, perhaps the most extreme sect in traditional Islam. In recent meetings with top U.S. officials, the Saudis have asked Washington to relax the pressure to reform. If the Saudis press too hard for democracy within their country, they will be directly at odds with Wahhabi clerics who would prefer to see an Islamic theocracy established.

Saudi Arabia is currently the world's leading exporter of oil, one of the top three countries the United States depends upon for foreign oil. Moreover, the United States looks to Saudi Arabia to help maintain stability in OPEC and within the Middle East generally. Any disturbances within Saudi Arabia will almost assuredly send oil prices immediately higher. A recent role-playing exercise was conducted in Washington with top former government, military, and cabinet officials participating. One scenario proposed a simultaneous terrorist attack against oil facilities in the United States and in Saudi Arabia. As the exercise played out, oil prices hit \$120 a barrel, doubling to \$5,214.00 the average annual energy bill for the typical U.S. household. Economic forecasts projected an imminent collapse of the current economic recovery in the United States and a loss of more than two million jobs, the largest drop since 1945.

The price reactions in the exercise were prepared by John Down, an analyst at Sanford Bernstein, who clearly understands the implications being role-played by the experts: "With only 2.2 million barrels a day of

spare capacity, which is enough capacity to meet a little more than one year of demand growth, the oil markets are at the mercy of political stability in Venezuela, Nigeria, and Iraq, as well as potential terrorist acts."²¹ Nor are the U.S. strategic reserves a long-term answer. Even with a maximum reserve of 770 million barrels, the U.S. government maintains the equivalent of only about two months of imports. Besides, if the United States were to tap into these strategic reserves, a panic signal could be communicated to world oil markets, with the result that oil prices would only surge higher.²²

Few events in international politics or economics are as well foreseen as was the death of King Fahd. Generally, events that cause political instability are sudden and unanticipated, the type of news that interrupts news programming worldwide and produces alerts. Devising immediate and effective responses to sudden, unpredictable events is something that cannot be relied upon with any degree of dependability. Unfortunately, our dependence on foreign oil is pushing U.S. government foreign policy into this corner. Our government has to respond instantly to adverse news that affects our oil-importing partners. Failure to follow initial responses with carefully devised long-term solutions runs the risk of adding momentum to what otherwise might be a temporary spike in oil prices. Even when oil supplies remain relatively stable and strong in world markets, uncertainty over economic or political developments can vault oil prices to new plateaus—plateaus that are only justified because of the uncertainty itself, not because any concrete action has actually depressed or disrupted world oil flows.

As we have mentioned, approximately 20 percent of our oil imports come from the Persian Gulf region. This puts great pressure on the United States to make sure its policy toward Israel includes strong recognition for the Palestinians. We should never forget that OPEC imposed the 1973 embargo specifically to punish the United States for assisting Israel. Our Arab oil-exporting partners in the Middle East want to see Israel make continued concessions to the Palestinians as the world moves toward establishing a Palestinian state. Even should the United States want to hold the line against certain concessions, oil pressure remains

available to counter the argument. To the extent the United States remains dependent upon foreign oil, the Islamic Middle Eastern countries will continue to have a strong say on U.S. policy regarding Israel. When we have to calculate that the hint of political instability itself is enough to send oil prices higher, we have to proceed very cautiously in our support of Israel, especially if that support encounters strong objections from Persian Gulf oil exporters. In the final analysis, we are forced to consider that Persian Gulf oil has always been anti-Israel oil.

THE EMERGENCE OF NATURAL GAS IN WORLD ENERGY MARKETS

While attention has largely focused on oil supplies, another development has been taking place just below the public's level of attention. Natural gas deposits typically accompany major oil finds. For decades, natural gas was seen as a worthless product. Lacking a ready market, many oil developers simply allowed natural gas to burn off to get rid of it. With growing concern that the world was running out of oil, interest has been building in natural gas. Over the past few years many important energy demands have been switched not just from coal to oil but now from coal and oil to natural gas. Looking at the statistics, we should realize that natural gas is rapidly becoming an oil alternative of major importance.

In the 1970s natural gas played virtually no role in America's energy profile. Today, natural gas supplies about 20 percent of the country's energy needs.²³ The good news is that while 60 percent of our oil is imported, nearly 83 percent of our natural gas supply comes from domestic sources.

In the last decade electric-power generation has shifted dramatically away from coal and toward natural gas. Nearly all new electricity-generating facilities under construction are using more efficient gas-powered designs. Moreover, natural gas now heats more than 60 percent of all U.S. households, and some sixty million residential customers use natural gas. Natural gas provides almost half the energy for commercial facilities in the United States and nearly 38 percent for industrial opera-

tions. More than 130,000 buses, taxis, and delivery trucks in the United States are powered by natural gas. At some level, we are all aware that these changes are taking place, yet few of us realize how many fewer applications are oil-dependent. The only major energy application that remains almost exclusively oil-dependent in the U.S. economy is transportation. We still fill our cars with gasoline even though increasingly we tend to heat and air condition our homes with natural gas.

A major development in the natural gas market has involved advancements in the technology needed to produce liquefied natural gas (LNG) economically. LNG is pressurized and chilled so it can be stored and transported conveniently, advantages that increase greatly the commercial applications to which natural gas can be put. LNG costs have come down by as much as 30 percent over the past six or seven years, due largely to technological advances in liquefaction and shipping. Right now LNG supplies only about 2 percent of all natural-gas needs, but that percentage is growing. By 2020, projections indicate that LNG could provide somewhere between 25 to 30 percent of America's total natural gas needs.²⁴ We turn again to oil historian Daniel Yergin, who estimates that a capital investment of somewhere in the range of \$200 billion will be needed for LNG to reach its full potential. He believes this investment will come from oil companies such as ExxonMobil, BP, and Royal/Dutch Shell, companies who, he observes, "have the financial heft to absorb the risk to the balance sheet and to absorb the volatility" of the marketplace.²⁵

Natural gas is also more plentiful than oil. Chemically, natural gas is composed mostly of methane. Natural gas is still considered a fossil fuel, one that, like oil, has traditionally been thought to derive from ancient trees and dinosaurs. Yet methane is commonly available. The truth is that natural gas is not only plentiful, we easily know how to generate it without any need to go dig up ancient bogs. Any major garbage landfill will produce a large quantity of methane gas that can be captured and used as fuel. Even conservative estimates of natural gas availability project that we have adequate reserves to last sixty years or more at current consumption rates. According to the Energy Information Administration of the U.S. Department of Energy, technological improvements have made

“unconventional production” techniques the largest source of U.S. gas supplies.²⁶ Translated into ordinary terms, we are now getting more of our natural gas from places other than the wells in which we also find oil. Instead, technological improvements and rising energy prices have made economical the recovery of natural gas from our abundant sources of tight sands, shale, and coal-bed methane contained in rocks. This has been good news for many mines in the Rocky Mountains that were previously closed because they were uneconomical to operate.

Moreover, natural gas is considered a “cleaner energy” in that burning natural gas does not generate the feared greenhouse gas of carbon dioxide. Not to worry, environmentalists can be expected to identify some other harmful gases that are emitted if burning natural gas begins to look like a possible solution to the so-called oil shortage. Besides, a lot of natural gas reserves are known to be in federal lands, so that should give environmentalists and conservationists plenty to fight over, even if they lose some carbon dioxide ground in the coming national debate over tapping more of our natural gas reserves. As Federal Reserve chairman Alan Greenspan likes to warn, we must be mindful not to allow environmental rules and regulations to become de facto energy policy without thoughtful and substantive debate on the energy issues themselves, not just the environmental concerns, something the radical environmentalists and conservationists have worked for decades to achieve.

OIL COMPANIES AND THE NEED FOR GREED

As we have pointed out, making a profit in America is not yet a crime, even if the profit is large. We have also noted that the dramatic rise in oil prices since the beginning of 2004 has given oil companies what critics like to characterize as “windfall profits,” profits that are unexpectedly large and sudden. We very quickly forget 1998, when oil prices bottomed out at less than ten dollars a barrel. At that time many oil executives must have been feeling suicidal, as were many oil company board members and shareholders. If we look back over a long enough perspective, the history of the oil industry has been one of peaks and valleys, strong shifts

between high and low prices, shifts that are often not explainable simply by reference to the expected dynamics of supply and demand economics.

Economics professor William J. Hausman, in studying long-term energy prices in the United States since 1800, makes the point that the history of oil prices has been unstable, with no clear long-term trend toward price increases. His observations are certain to surprise those who feel alarm that the current spike in oil prices is irreversible:

It is actually difficult to make generalizations about the long-term trend in oil prices (and it certainly cannot be said that there has been a secular upward trend). Perhaps the most remarkable feature of the oil industry has been its relative price instability, which is especially evident in the energy price shocks of the 1970s. We remain heavily reliant on oil (both domestic and imported) as a source of energy. It is conceivable that the oil market may remain unstable, and thus it is likely that energy users in the United States will continue to move toward more diversity in sources of fuel.²⁷

Hausman notes that several major shifts in the U.S. consumption of energy have occurred since the early 1800s. For the first three quarters of the nineteenth century, wood was the primary fuel used in America for all basic uses. Between 1870 and 1910 the amount of energy consumed in America increased tremendously, and a shift occurred away from wood and toward coal as the dominant fuel. Through the course of the twentieth century another shift occurred as oil and gasoline became America's dominant fuel sources. Now, Hausman believes, a further shift is occurring, away from relying primarily upon oil and natural gas toward a diversity of fuels, a mixture that would allow for the emergence of new fuel sources into the mainstream, including oil. Hausman further notes that the price of particular fuels has increased, but as the mix of fuels used adjusted, the "price of energy," as opposed to the price of particular fuels, has remained relatively stable over the more than two hundred years he studied. Applying Hausman's logic, a mix of fuels that uses more natural gas and nuclear power might well create the pressures that would keep

the price of energy stable, even should the price of oil and gasoline continue increasing.

Thinking about nuclear power and natural gas together may open up an interesting new vista on how the composition of U.S. energy supply may be filled in the years ahead. If we move toward more reliance on natural gas and nuclear power to generate electricity for our businesses and homes, we may be able to take substantial demand off our use of oil. As we have mentioned, the only remaining application that depends almost exclusively on petroleum is transportation. Using more nuclear power and natural gas should create more net energy supply; so simply by diversifying our energy applications, we will be able to relieve the extent to which the United States is dependent upon foreign countries to import the oil we need to continue our industrial plant and maintain our lifestyles.

We need to import 60 percent of all the oil we currently use, a percentage that shows every sign of growing toward importing even a larger proportion of the oil we consume. With natural gas, we need to import only 20 percent, and domestic supplies remain abundant. All our nuclear power is produced right here. Changing our mix of fuels to include more natural gas and nuclear power holds the possibility of reversing current trends so that we might be able to reduce the percentage of oil we have to import. Moreover, the global-warming alarmists should be encouraged that neither natural gas nor nuclear power put any significant quantity of carbon dioxide into the atmosphere.

We can also reduce our dependence on foreign oil by exploring more of Alaska and by opening up our substantial continental shelf for increased offshore exploration. Reducing our dependence on foreign oil must remain a long-term goal of U.S. foreign policy for national security reasons, if not for reasons of pure economics. Even if the world market could supply all our oil needs for decades to come, we cannot count on favorable politics to ensure our steady supply. Our constant vulnerability to political instability within the borders of our foreign oil-importing partners opens up a ripe field for terrorists and other enemies of the United States to inflict harm upon us, harm that begins by developing a

crisis in which oil prices spike. If we become almost totally dependent on imports to get the oil we need, we will never be rid of oil threats by corrupt political leaders and oil extortion by terrorist organizations.

As we work through all these issues, oil companies must take care that large profits received when oil prices spike are reinvested in continued oil exploration and continued technological innovation. Employees, officers, shareholders, and board members all deserve economic reward when oil companies experience profits. The image of windfall profits is one that must be carefully managed. Politicians from the Left tend to be less enthusiastic about large corporate profits, seeing them as a ready-made opportunity to impose wealth redistribution to their favored clients, typically those who are less economically advantaged, who can be argued to be bearing a disproportionate burden when oil prices increase. The higher oil prices go, the more likely it is that consumers will begin to feel gouged by greedy profit-takers. Money from the pocket of the consumer to the pocket of the shareholder only feels justified to some unspecified point; beyond that, the oil industry should be greatly concerned. Eventually, consumers will react negatively, sometimes angrily.

The Consumer Federation of America (CFA) places the blame on the wave of mergers that has allowed considerable consolidation within the oil industry as well as the support of a pro-oil Bush administration. In a CFA report subtitled "Price Spikes, Excess Profits and Excuses," Mark Cooper noted:

While the operation of the domestic oil market is complex and many factors contribute to pricing problems, one central characteristic of the industry stands out—it has become so concentrated in several parts of the country that competitive market forces are weak. Long-term strategic decisions by the industry about production capacity interact with short-term (mis)management of stocks to create a tight supply situation that provides ample opportunities to push prices up quickly. Because there are few firms in the market, prices hold above competitive levels for significant periods of time. With an administration in Washington that is very unlikely to criticize or restrain the oil industry (both the President

and Vice President came out of the oil industry), oil companies have the opportunity to flex their pricing power.²⁸

We may be asking too much to expect oil company executives to restrain price increases when supply and demand configurations show the market will absorb higher prices. Quarterly performance measures and annual bonuses all work in favor of getting the largest revenue returns the markets will allow. Still, consumers who believe gas prices are high because a sympathetic Republican president has not strictly enforced antitrust laws will demand answers both from the oil companies and from the politicians. In the 1970s when consumer anger boiled over, Congress passed a retributive windfall-profits tax on the oil industry. If energy prices continue to rise, pressure for legislation to tax what are seen as unjustified oil company profits could easily happen again.

As prices at the gas pump skyrocket, consumers will feel an increasing economic stranglehold. As huge amounts of money transfer from the paychecks of average Americans to large oil company conglomerates and foreign nations, consumers will need no further proof that a play is on by those who control oil to move substantial wealth to their side of the table.

How much of our national wealth can we send off to other nations in search of oil? Every dollar we send overseas is gone forever, to the benefit of the foreign country supplying us with oil. We are swapping the satisfaction of our current needs for our future economic well-being and security. If we move to become 100 percent dependent on foreign oil, we will lose our sovereignty. Every day that our dependence on foreign oil increases, we are putting ourselves more at risk. Even minor instances of instability in distant lands can send shock waves through a U.S. economy that is dependent on foreign stability for our flow of oil. How many of our petrodollars end up in the hands of terrorists whose ultimate goal is to use our dollars against us? Terrorists planning our destruction are more than happy to have us fund them as we purchase oil with blinders on.

We can no longer avoid these questions. America won World War II in large part because it was able to fuel the allied armies in their campaign to defeat Nazi Germany and Imperial Japan. Only some sixty years

later, have we already forgotten the strategic importance of oil? As we become ever more dependent upon foreign oil, we are putting ourselves at increasing risk, not only for our continued economic well-being, but for our national security as well. What if our oil-supplying nations decide to cut off our oil because they do not want us to go to war? How do we make a decision to deploy the American military when we need foreign oil to supply our tanks, planes, and warships? We must never reach a point where we are dependent on the blessing of other nations to keep open the supplies we need to fight a war we believe is essential to our national defense and others believe is ill-advised. The black gold stranglehold we are placing on ourselves is one we can avoid.

We must renew our efforts to search for oil domestically, determined to reduce the percentage of oil we must import. We must consider energy alternatives that show promise, such as natural gas and nuclear power. As the price of crude oil continues to increase, natural gas and nuclear power become increasingly attractive and economic alternatives. If we are determined to switch the municipal generation of electricity to natural gas and nuclear power sources, we can reserve our oil supplies for use primarily in transportation. These are steps we can take now. Over the coming decades, inventions may open up other alternatives, but we cannot afford to wait. If we can scale back the percentage of foreign oil we import from 60 percent to 50 percent, we are headed in the right direction. Only if we are capable of thinking like this do we have the possibility of removing the black gold stranglehold we have placed around our own throats. Our economic security as well as our sovereignty may well depend on our moving away from continued dependence upon foreign oil. The stakes are that high.

7

WHY GOVERNMENT OIL PLANS FAIL

In nearly seven years of operation, the Oil-for-Food Programme has been required to meet an almost impossible series of challenges, using some 46 billion dollars of Iraqi export savings on behalf of the Iraqi people.

—U.N. Secretary-General KOFI ANNAN,
November 20, 2003

AS WE NOTED IN the last chapter, governments are tempted to think we can best regulate oil markets with legislation, administrative measures, and other forms of government-designed market intervention. Governments may be required to make sure markets remain free and robust. We want to eliminate criminal activity and prevent rogue states from disrupting the international free flow of oil. But when governments decide that their intervention is needed to direct markets or to determine a particular configuration of supply and demand, that is when we tend to get into trouble.

Put simply, U.S. legislators are typically lawyers who have become politicians. Rarely have legislators had extensive business careers before they enter politics. Even more rarely are legislators professionally trained economists. Still, we have seen in the United States continued attempts by our politicians to intervene directly into energy markets to predetermine

results. Typically these efforts fail. Often the unintended consequences of government intervention are worse than the energy-market problem the politicians were trying to solve in the first place.

Nor is the problem limited to the United States. The attempts by the United Nations to regulate oil economics have been equally ill-fated. We would argue here that politicians worldwide would be best advised to limit their energy-market involvement to careful steps aimed predominately at maintaining open and unlimited access to oil markets. Politicians attempting to control or direct energy markets frequently end up where they never anticipated being.

We must be especially watchful today when the political enemies of oil have lined up to pressure governments to enforce statutes that embrace fossil-fuel thinking, enforce global-warming fears, and codify the wishes of conservationists and environmentalists to punish the continued unbridled exploration, production, and use of carbon-based fuel products.

Governments have a role to play in oil markets, but that role properly defined is very limited.

WHY DON'T WE HAVE ENOUGH OIL REFINERIES?

If we were to find a huge quantity of oil in the continental United States tomorrow, the problem of excess demand would not be solved. More supply of crude oil today is not sufficient to lower gasoline prices.

Why not? The answer is that the United States simply does not have the oil-refining capacity to turn out any more gasoline than we are currently producing. For thirty years, no new gasoline refineries have been built in America.

That startling reality can only be understood when we realize that since the mid-1970s economic factors have mitigated against the decision to build new refineries. The last new refinery in America was constructed in 1976. Without more refineries, we are stuck right where we are, regardless how much crude oil is available to refine.

So the increasing demand for gasoline we are experiencing in the

United States must continue to outpace the ability of American refiners to put more gasoline in the pumps. As we entered 2005, American refineries are operating at 96–98 percent capacity in peak times and 90 percent capacity with normal operations. That is estimated to be about full capacity at the present time.¹ Without additional refinery capacity, more demand for gasoline inevitably means higher prices. With no excess refining capabilities available, there is no other alternative.

In 1981 there were 324 refineries in the United States, and refining capacity was at 17.9 billion barrels per day. In 2004 there are only 149 refineries in the United States. Still, refining capacity has held at 16.9 million barrels per day, down from 1981, but nowhere in proportion to how many refineries have closed.

Why? Since 1981 many small refineries have simply closed. The profit margins in oil refining are small, and since 1981 many independent refineries have found that their operations were not large enough to meet the economies of scale. Many closed between 1981 and 1996 when oil-refining capacity in the United States exceeded demand. Gasoline prices were simply not high enough to meet the increasing costs of operation.²

In the past ten years U.S. refiners have invested an estimated \$47 billion to make environmentally mandated changes to their refineries. Many of those changes have been made to produce the cleaner, low-sulfur fuels that have been mandated by legislation.³

Oil companies like to build refineries near coastlines in large part to economize on fuel transportation costs. Approximately 50 percent of all Americans live near coasts, and few people welcome new refineries with the same enthusiasm with which they greet beach homes. Nationwide, the idea of a new refinery is certain to generate a NIMBY response—Not In My Back Yard.

Refineries are obtrusive and smelly. People worry about environmental impacts, including more truck traffic carrying hazardous materials. In California, the fear of harmful leaks in the event of an earthquake is an added worry. The California Energy Commission reports that ten refineries, representing 20 percent of the state's refining capacity, were closed in the decade between 1985 and 1995.⁴

President George W. Bush has proposed offering closed U.S. military bases as available sites for new oil refineries. Yet years of neglect have left substantial environmental cleanup costs at the closed bases. Problems range from unsafe ammunition disposal to harmful contaminants, such as leaking storage tanks that have contaminated groundwater. The Pentagon has already spent \$8.3 billion to clean up contamination at closed military bases, and another \$3.6 billion is scheduled for the ongoing effort.⁵ Oil companies might still face additional costs preparing the land to meet the environmental requirements of operating an oil refinery.

Using closed military bases might help solve the issue of location, but the economics remain difficult. The cost of building a 150,000-barrel-a-day refinery is estimated to cost about \$2.4 billion.⁶ Unless gasoline prices remain relatively high, this capital cost may be difficult to recover. One industry joke asks, "How do you make \$1 million in the refining business?" The punch line: "Spend \$6 billion." Average industry profits in the refining industry have averaged less than 6 percent since the last refinery opened twenty-nine years ago in Garyville, Louisiana.⁷

To meet increasing demand, the industry has gone the route of expanding existing refineries rather than building new ones. This type of incremental growth is less costly; still the result expected is far less than what is needed. Between 2005 and 2007 industry internal expansion plans are expected to grow refining capacity at an annual rate of 1 percent, half the anticipated pace of demand for the same period.⁸

Industry critics frequently charge that the major oil companies have forced smaller refineries out of business. Limiting the number of refineries is seen as a way for large oil companies to keep gasoline prices high. Today the largest five oil refiners in the United States (BP, ConocoPhillips, ExxonMobil, Royal Dutch Shell, and Valero) control more than half (52.4 percent) of the domestic refinery capacity. Ten years ago these same top five oil companies controlled only one-third (34.5 percent) of the domestic refinery capacity. Here is a typical charge from the environmental Left:

This dramatic increase in the control of just the top five companies makes it easier for oil companies to manipulate gasoline supplies by in-

tionally withholding supplies in order to drive up prices. Indeed, the U.S. Federal Trade Commission (FTC) concluded in March 2001 that oil companies had intentionally withheld supplies of gasoline from the market as a tactic to drive up prices—all as a “profit-maximizing strategy.” These actions, while costing consumers billions of dollars in overcharges, have not been challenged by the U.S. government.⁹

The government probably brought no charges against the oil companies because maximizing profits is not yet a crime. If an oil company engaged in practices that made its gasoline unreasonably expensive, the market itself would have solved the problem. Collusion between oil companies, if it had occurred, would have been a crime. But maximizing profit was probably a good idea in an oil-refinery business where the profits are relatively thin even in the best of times.

Oil companies seeking to build refineries also face a variety of hurdles: getting public approval of the land purchase, obtaining the required environmental permits, investing substantial capital in plant and equipment, and the added risk that, should they actually succeed in making a dollar, critics will unfailingly charge that the oil companies have intentionally manipulated supply so as to artificially raise the price of gasoline to the detriment of the consumer.

We might consider that the higher prices we are paying for gasoline today are putting into play the very forces we need to advance the market. Oil companies can be counted upon to fight the battles needed to find the land and work through the required environmental permits, provided a reasonable profit can be anticipated from building new refineries. Until that point is reached, a limit on refinery capacity will remain the bottleneck restraining a greater supply of gasoline from meeting the increasing demand of an ever-growing market.

Imported gasoline from foreign sources is now at 10 percent of supply, up from a negligible amount only a few years ago. Even here there are problems. After the *Exxon Valdez* disaster, many U.S. oil companies divested themselves of tanker fleets rather than face the embarrassment of another oil spill. Independent tanker operators simply do not have

enough of the double-hulled tankers needed to import gasoline into the United States in compliance with current environmental regulations.

If we are unwilling to reduce the burden of meeting these environmental requirements, we will have to wait until the price of gasoline becomes sufficiently high that the investment risk of opening new refineries once again makes sense to the major oil companies. Today the market economics of the oil-refinery business are not yet at that point. Oil companies must answer to investors. Even though oil-company profits today are reaching record numbers, stock buy-back plans probably make more stockholder sense than would decisions to build more refineries. Who knows where oil prices will be tomorrow?

Stock buy-back programs increase stockholder value right now. Costly investments in constructing new refineries would incur substantial economic risk even in an unregulated market. Faced with large and growing environmental-protection costs, the intrinsic investment risk of building a new refinery makes doing so an even more difficult decision to reach. Oil company executives must first justify their decisions to a board of directors. A board that is properly doing its job will be protecting the economic welfare of the shareholders—regardless of what politically motivated critics from the environmental Left may charge.

To appreciate the amount of investment capital needed to build new refineries and to understand how the world considers the risk involved, note this: In 2005 the United States is expected to refine approximately 17.125 million barrels of oil per day, approximately 25 percent of the world total of 82.8 million barrels per day. The next largest oil refinery competitor is Russia, which is expected in 2005 to refine only 5.4 million barrels per day. Only thirteen other countries refine more than 1 million barrels per day, the largest of which is Japan, at 4.7 million barrels per day. Even Saudi Arabia and the United Kingdom each only refine 1.8 million barrels of oil a day.

The oil-refinery business is costly, and making a profit is risky. That we have retained such a large oil-refining capacity at all is a testament to the great size and strength of the U.S. marketplace.

Still, conservationists and environmentalists regularly blame the

United States for consuming too large a proportion of the world's natural resources in relation to the size of our population. This criticism fails to realize that much of the development of the oil market worldwide continues to benefit from the size and capital strength of the U.S. marketplace. Our increasing imports drive profits in other nations, stimulating international capital structures to emerge more strongly outside the United States. Viewed from the perspective of interdependence, gains in the U.S. marketplace are not losses experienced in other nations. If the U.S. marketplace remains strong, gains in the oil market here should be reflected by gains in the oil market worldwide.

All of this depends on the daily activity of the international oil marketplace, not on central-planning government bureaucracies. Governments would be best advised to limit their involvement in the oil marketplaces to making sure those marketplaces function in an open and free way, not in devising central-planning bureaucracies or in enacting restrictions that limit trade for narrowly conceived advantages for favored countries.

OUR GREAT FAILURE WITH OIL PRICE CONTROLS

As 1971 progressed, President Richard M. Nixon became increasingly obsessed with winning reelection in 1972. In retrospect, this concern seems almost silly. In 1972 Nixon won a landslide victory against Democratic Party challenger George McGovern. When the final results were tallied, Nixon won every state except Massachusetts. The nation solidly rejected McGovern's "peace-now" campaign, which was predicated on the argument that the Vietnam War was fundamentally an unjust war that the United States could not win. If any president was ever given a mandate, Nixon received one in 1972, endorsing even the nation's continued involvement in Vietnam.

Yet in 1971 Nixon was beset with ghosts and worries. He never shook the idea that he had lost the 1960 presidential campaign to John F. Kennedy in large part because of the 1958 recession that haunted the last years of the Eisenhower administration. Sure, Nixon also believed that

Mayor Richard J. Daley stole the election for Kennedy by withholding Cook County votes until the last minute, when Daley knew for sure just exactly how many fraudulent votes were needed to tip the scale for Kennedy. Yet, deep down, Nixon believed he could not go into the election of 1972 and win if the country were in a recession.

This, of course, was not the only fear Nixon had; also, in retrospect, Nixon had a dark side that could appear paranoid about almost any aspect of domestic or foreign policy. The Watergate break-in occurred before the 1972 election, but the cover-up Nixon and his top aides put in place held until after the election. Watergate did not force Nixon's resignation until 1974, two years after his reelection.

Throughout 1971 Nixon held a series of meetings with his top advisers, exploring what steps he could put in place to make sure the economy would be booming on November 7, 1972, election day. Nixon came up with two bold moves. First, he put in place a set of wage-and-price controls designed to hold inflation in place. Second, he closed the gold window, completely taking the United States off the gold standard and ending the ability of foreign holders of U.S. currency to redeem dollars for gold. Each of these steps had far-reaching and continuing effects on the world petroleum market.

Most of Nixon's wage-and-price control scheme was declared a failure and was abolished relatively quickly. The price controls on oil, however, remained in place until 1980. At the end, there were different prices set for ten different types of crude oil. The lowest-price crude cost \$6 per barrel, while the most expensive "stripper oil" sold for about \$15 per barrel. Robert E. Litan, vice president and director of economic studies at the Brookings Institute, and Philip Verleger, a private economist, observed: "The patchwork system contained many perverse incentives. Rich producing wells were left to expire because producers had no incentive to maintain them, while investments poured into many small wells that would never make a difference to the nation's energy future."¹⁰

The same was true of natural gas, where the price-control scheme ended up with thirty-two different prices for natural gas. Daniel Yergin and Joseph Stanislaw noted, "The whole enterprise was an elaborate and con-

fusing system of price controls, entitlements, and allocations. It was estimated that just the standard reporting requirements for what became the Federal Energy Administration involved some 200,000 respondents from industry, committing an estimated five million man-hours annually."¹¹

What would have happened had we instead applied those five million man-hours to the exploration and harvesting of oil instead of filling out reports about oil prices? Still, adherents of peak-production theories would have thought the result would have been no gain, since practically all the oil in America had already been found.

Nixon pursued what he thought was a good idea—government intervention could maintain prices so as to control inflation and stimulate economic growth. There was only one problem: it didn't work. The market economy was too complex to regulate simply. The resulting confusion produced a myriad of conflicting regulations that ultimately failed to comprehend the nuances of dynamic market forces. The result was a mountain of paperwork that businesspeople had to fill out for bureaucrats while mismatches in supply and demand were the everyday result in the oil economy worldwide.

An argument can be made that the 1973 oil shortage began not with the Arab oil embargo but with the mismanagement inherent to the price-control debacle. On January 11, 1973, what was known as phase-three price controls were put in place. Unlike the previous two phases, these involved a voluntary phase. Given the opportunity to resume market-driven pricing, the oil companies increased the price of winter heating oil by 8 percent and stepped up production, anticipating a cold winter and increased demand. This left oil refineries in an awkward position to readjust output to generate sufficient gasoline for summer travel demand.

Seeing how the oil companies were taking advantage of this rare market opportunity, the Cost of Living Council retaliated with Special Rule No. 1 in March 1973, an order that reimposed mandatory price controls on 95 percent of the domestic petroleum market. The first signs of the gas shortage began, then, in the summer of 1973. Special Rule No. 1 ended up punishing consumers more than the oil companies. By freezing the price of petroleum for all but independent refiners, the Cost of Living Council

prevented gas prices from reaching a market-based supply-and-demand equilibrium.¹² As a result, oil companies produced less gas than market conditions absent government intervention would have dictated.

It was not until October 17, 1973, that the Organization of Petroleum Exporting Countries (OPEC) decided to punish America for supporting Israel in the Yom Kippur War. Five months before the embargo, by May 1973, some one thousand U.S. gasoline service stations had already shut down because of lack of fuel. Many other service stations were forced to cut back on the hours they were open, or they began placing limits on the amount of gasoline motorists could purchase at each stop.¹³

The Arab members of OPEC took many steps to curtail production to the United States. The original idea was to cut their exports to the United States by 5 percent each month until Israel pulled out of the territories it occupied at the end of the war. Then, on October 20, 1973, President Nixon approved a \$2.2 billion aid package for Israel, and Saudi Arabia cut off all oil exports to the United States. Between January and December 1973, OPEC increased oil prices 470 percent, further deepening the crisis. Any American who lived through the period remembers vividly the long lines at the gas stations, the panic and hot tempers that resulted, and the overall damage done to the U.S. economy.

What we fail to realize is that much of the fault was our own. Government price controls had set an artificial ceiling, demanding that a gallon of gasoline cost no more than 46 cents. This gave very little incentive to refiners to shift production to gasoline in an effort to meet the obviously greater demand created by the OPEC embargo.

Had we allowed oil to seek a market price, perhaps around 55 or 60 cents a gallon (prices that look ridiculously low given today's prices), perhaps then the refineries would have shifted gears, determined to produce as much gasoline as fast as they could. A price set by the market may have been all that was needed to remedy the shortage. Yet at the artificially low price set by bureaucrats, oil companies had no incentive to invest in added capacity. At 46 cents a gallon, oil companies may even have taken losses if exceptional moves were made to flow gas into the market to meet the crisis.

Would consumers have paid the higher price for gasoline in 1973? Without doubt, consumers would have jumped at the chance. During the oil embargo, price was not the issue—availability was the problem. At most gas stations throughout America, operators didn't have any gas to sell at any price.

Still, the lesson most Americans learned during the 1973 oil embargo was that the Arabs had discovered an oil weapon to which we were vulnerable because we are so dependent on foreign oil. Even this supposed conclusion is probably wrong. Oil is fungible, which means simply that this oil can easily be substituted for that oil. Once oil is in the tanker, nobody knows where the oil came from, except for the records of the tanker and the word of the crew. OPEC oil shipped to another nation, perhaps in Europe where there was no embargo, could simply be resold to the United States as European oil. Experts analyzing the 1973 oil embargo have argued that the United States suffered very little net effect: "Supply routes were shuffled, but import volumes remained steady."¹⁴

Markets are very adaptable and flexible, especially if they are unrestricted by governments. The truth is that nobody can tell where the gasoline you pump ultimately came from. There are several reasons for this. To begin with, the Energy Information Administration of the U.S. Department of Energy openly admits that it collects no data on the source of gasoline sold at retail outlets.¹⁵

Nor does the company name on the service station tell the whole story. Gasoline is sold at about 167,000 outlets in the United States today. About one-third of these gas stations are unbranded dealers that sell gasoline of any brand. The remaining two-thirds of all gas stations are branded, but even here the gasoline sold may not come from that company's refineries. Gasoline from different refineries is often combined for shipment by pipeline. Different companies owning branded service stations in a particular geographical area may all be buying their gasoline from the same pipeline terminal.

Yes, you could attempt to examine the small amounts of additives placed by particular companies in their gas in an attempt to trace that gas back to a particular company's refineries. By the time the gas is mixed in

the pipelines, however, the additives are generally mixed together as well. Most refineries buy crude from different sources, not just the crude imported by the company that owns the refinery. So from the first moment oil goes into the refinery system, we find a mix of suppliers, with the refineries make their purchases depending on the relative cost and the availability of crude oil from different sources at different times. Remember, oil is fungible. Oil from many different sources can be mixed and interchanged with no appreciable impact on the final result.

WHY DOES THE U.S. GOVERNMENT RESTRICT OIL EXPLORATION LEASES?

On July 12, 1998, President Bill Clinton signed an executive order extending a moratorium on the leasing of oil drilling sites on the outer shelf of the U.S. continental shelf to June 30, 2012.¹⁶ This moratorium affected virtually all the coasts of California, Washington, Oregon, New England, the North Atlantic, the Mid-Atlantic, and the Northern Aleutian Basin off Alaska. Also included were the eastern Gulf of Mexico off the coast of Southwest Florida, an area extending more than eight hundred miles from Baldwin County, Alabama, southward to the Florida Keys.

Clinton's motivation was obvious. He signed the executive order against the background of scenic Monterey Bay in California. In a speech before the National Ocean Conference, he made his environmental sympathies clear: "Our oceans are the key to the life-support system for all creatures on this planet."¹⁷

Clinton further challenged Congress to fund a \$2.3 billion clean-water plan to reduce pollutants running from the land into the rivers and oceans. What Clinton was implying was hard to miss—oil exploration inherently and inevitably wrecks offshore environments. The only responsible steps we can take must involve cleaning up pollution, not advancing oil exploration. Environmentalists were disappointed that Clinton did not make the offshore leasing ban permanent, as they had requested. Vice President Al Gore accompanied the president at the Monterey Bay signing of the moratorium. Both made sure they were photo-

graphed while examining the tidal pools in the rocks on the Monterey coast, surrounded by jeans-clad admirers of the natural setting.

On June 6, 2005, Florida's two senators, Republican Mel Martinez and Democrat Bill Nelson, announced that a deal had been reached with the Senate Energy Committee leaders that would block any drilling in federal waters off the shore of Florida. The senators declared that the offshore drilling could endanger the state's \$50 billion tourism industry as well as the environment. They were also concerned that the offshore drilling might get in the way of space shuttles launched over the Atlantic Ocean.¹⁸

The U.S. Department of the Interior concludes that "a significant source of oil and gas for the Nation's energy supply, lies in the Outer Continental Shelf (OCS). At the end of 2002, the OCS supplied more than 25 percent of the U.S. natural gas production and more than 30 percent of the total domestic oil production. The Department of the Interior estimates that 60 percent of the oil and 59 percent of the gas to be discovered in the United States are located in the OCS."¹⁹ That may be the case, but environmentalists will fight to the death against any effort to explore for oil anywhere off the U.S. continental shelf.

Objections to drilling in Alaska remain equally strong. When the George W. Bush administration proposed in 2004 to open up the 23.5 million acre preserve in Western Alaska known as the National Petroleum Reserve—Alaska (NPR-A), all the Wilderness Society asked for was a "balance" that protected the region, which "is home to myriad wildlife and waterfowl, and is a vital subsistence hunting and fishing ground for native Alaskans."²⁰

Don't be confused—this rhetoric is easily translated as a warning to oil companies to stay away. Terms like *rational balance* are not meant to include any room in the equation for oil exploration. What groups like the Wilderness Society would like to see is a permanent ban on virtually any area that today does not already have an oil well on it. Anywhere else where drilling is proposed is certain to be important to some bird, fish, animal, or native group—or to be pristine earth that should never be violated by anything as foul as the oil business.

Let's take a look at group called the Porcupine Caribou Management

Board (PCMB). The group was established in 1985 by six signatories—the Government of Canada, the Government of Yukon, the Government of the Northwest Territories, the Inuvialuit Game Council, the Gwinc'in Tribal Council, and the Council of Yukon First Nations. The PCMB is dedicated to manage the porcupine caribou herd in its native Canadian and Alaskan habitat and to preserve the continuity of the herd for subsistence use by the natives who harvest the herd. The PCMB objects to increased oil exploration in the Arctic National Wildlife Refuge (ANWR) because this land comprises “much of the concentrated calving grounds” of the porcupine caribou herd.²¹

We have no doubt a convincing argument can be made for the preservation of the porcupine caribou herd in its natural habitat. We have only a few considerations. Do we have to accept as a predetermined conclusion that no matter what oil companies do, their oil exploration and production efforts must be detrimental to the animals? Couldn't we consider for a moment the possibility (remote as it may seem to groups like the Porcupine Caribou Management Board) that oil companies might be able to understand the habitat of the porcupine caribou and possibly even that the oil companies might be able to improve that habitat for the betterment of the herd?

Somehow, we fear that the PCMB will argue that only the PCMB is capable of understanding the herd and the only steps that can be taken to improve the herd involve leaving the natural habitat exactly as it is, regardless what any of the subsistence users may have previously done in their efforts to harvest the herd. Besides, how many people benefit from the porcupine caribou herd compared to the people who might benefit from the oil produced from the ANWR? Most people would not be able to identify a porcupine caribou even if they saw one in its natural habitat. Most people have never been to the ANWR, and the PCMB most likely wouldn't want too many of them to visit.

We are led to the conclusion that environmental groups are organized and determined to oppose all new oil exploration or production in the United States. Consider this 2003 decision of the federal courts in California. The Minerals and Management Service of the U.S. Department of

Interior had given out thirty-six oil and gas exploration leases offshore San Luis Obispo, Santa Barbara, and Ventura counties. On December 9, 2003, Judge Claudia Wilkin of the U.S. District Court for the Northern District of California issued an order that essentially mandated the federal government to submit the leases to the California Coastal Commission for review and public hearings before they could be given out. The decision effectively blocked the leases from ever being granted.

The law firm bringing the case is known as the Environmental Defense Center (EDC, Web site www.edcnet.org). The EDC represented a long list of clients in the lawsuit, including the Sierra Club, Friends of the Sea Otter, California Coast Keeper, and an activist group known as Get Oil Out! The leases in question could have doubled the historic oil production off the coastline in question, something the EDC viewed as a threat rather than an opportunity, one that posed "increased risks of oil spills, air and water pollution, and toxic gas releases." For more than two decades the EDC has represented clients opposed to drilling off the California shore.²²

Reading through the huge volume of literature and litigation generated by the environmental and conservation movements, one comes to the conclusion that they are politically invested in maintaining the "truth" of the fossil-fuel and global-warming theories together with all the subsequent conclusions of these theories. In other words, it almost seems as if the environmentalists and conservationists want us to run out of petroleum because they can only see petroleum as harmful to the environment when we explore for it, extract it, and burn it.

Extreme environmentalists and conservationists sound virtually like socialists. Just below the surface is a leftist bias that oil is bad because it fuels industrial society. If we are running out of oil—their thinking sounds like they have concluded that there is a justice here, that the earth is getting even by punishing us. So our industrial society will have to scale back—which seems okay with the radicals. If we can't conserve now, maybe we will be forced to conserve in the future, simply because there will be no more oil and we haven't developed alternatives—that too seems okay with the radicals.

Nowhere in the literature or litigation efforts of these environmental and conservation radicals do we find a glimmer of possibility that oil companies might act responsibly, that they could find more oil offshore and in Alaska *and* actually improve the environment. To the radicals, joining the terms *oil companies* and *environmental improvement* results in an unavoidable oxymoron. To the radicals, the term *oil company* signifies only environmental degradation, maybe even imperialism. After all, oil companies are capitalistic by nature, and capitalism results inevitably in imperialism, exploitation of the poor, and the exhaustion of all natural resources to serve the self-centered interests of the rich.

We wonder how many environmental and conservation lawyers drive to court in BMWs or Mercedes-Benz automobiles versus hybrids or hydrogen cars? Radical groups always need financial supporters, and those who contribute large sums to radical environmental and conservation groups are rarely themselves poor. Putting this contradiction aside, we challenge the logic of the radicals. The environmental record of the oil companies operating off the shores of the continental United States and in Alaska has been admirable overall, even when it comes to cleaning up the few accidents that have occurred over the last forty or fifty years of oil exploration and production in those areas.

The underlying goal then of radical environmentalists and conservationists is not to allow the granting of oil leases in a so-called balanced manner but to make sure they apply enough political pressure so politicians have no choice but to buy into their agenda and block all future oil exploration leases. Politicians ultimately depend upon voters to remain in office. Radical environmentalists and conservationists understand this political reality. Until those who support responsible oil exploration and production realize that they are locked in a political battle with extremists on the other side, we will remain in an oil-and-natural-gas stranglehold from which we are unlikely to emerge.

THE UNITED NATIONS OIL-FOR-FOOD SCANDAL

Extensive government involvement in regulating the oil business also

creates ample opportunities for scandal. Nothing illustrates this better than the oil-for-food corruption that came to light from captured documents found in Iraq when Saddam Hussein was deposed by the U.S. military in 2003. International politics may well prevent the investigation from ever being complete. Still, the U.S. Government Accounting Office has already estimated that Saddam Hussein had a pay-off system in place that raked in some \$10 billion as percentage payoffs to a wide range of international trading partners and friends, including officials linked with the United Nations. Repeatedly there have been suggestions that the scandal might reach as high as the office of Kofi Annan, the Secretary-General of the United Nations.²³

In the buildup to Operation Iraqi Freedom, President Bush repeatedly urged the United Nations to enforce the dozens of resolutions passed over the years in the attempt to restrain the criminal activities of Saddam Hussein. When the United States finally ran out of patience and took military action, together with a "coalition of the willing," Secretary-General Annan took a potshot at the president, claiming that the U.S. military action was "illegal." Some fifty-one days before the 2004 presidential election in the United States, Annan told the BBC that the decision to take military action contravened the U.N. charter and should have been made by the Security Council, not unilaterally.²⁴ The statement was widely interpreted as an attempt by Annan to influence the election in favor of the Democratic Party candidate, John Kerry, a candidate who had been critical of President Bush's decision to invade Iraq.

The oil-for-food crisis highlights the danger of international control. The original idea of the United Nations was to provide an international forum where conflicts could be resolved according to principles of justice before wars broke out. The concept sounds correct in the abstract. All too often, however, the United Nations appears to be nothing more than an anti-American debating society. An underlying issue in the 2004 presidential campaign was President Bush's strong statement that he would never hold American security interests hostage to the decision making of international bodies such as the United Nations.

As illustrated by the oil-for-food scandal, the United Nations is not a

pristine body, part of a harmonious "new world order" where peace and human justice are the determining standard. How many Security Council resolutions were influenced by member states where officials of the countries involved were receiving oil-for-food payoffs? To what extent was Saddam Hussein buying time by making sure enough officials worldwide were being paid sufficiently so they would have a strong financial interest in making sure he remained in power? These considerations undermine any illusion that the United Nations can be given the benefit of the doubt that the decision process will be unbiased or fair. Greed fueled by money under the table cannot be the basis upon which a new world order of universal freedom and human justice will result.

We should draw the lesson here that governmental processes, even international governmental processes, can be susceptible to corruption. What we are learning from the U.N. oil-for-food scandal is that bureaucratic decision making and the implementation of oil-related programs may reflect more the desire to protect those at the core of corruption rather than the impulse to administer an objective or fair standard to the benefit of all.

While there may be corruption in a market economy, an international market economy still affords countless opportunities for individual decision making across and within hundreds or thousands of corporate structures. Market collusion, while possible in the international oil business, is difficult to implement and maintain over time, especially where companies who break ranks can anticipate deriving important competitive advantages, particularly in a business as complex as the international oil business. Once again, we see that when governments get extensively involved in the oil business, the net result is likely to be negative to markets and consumers alike.

PART 3

BLACK GOLD STRANGLEHOLD

8

THE DIMINISHING U.S. PETRODOLLAR

There is enough oil to service the global economy for decades to come and perhaps well into the second half of this century. . . . For the world at large—but particularly for the emerging economies of Asia, Africa and Latin America—there is enough oil to support their growth, in the same way that this important hydrocarbon fuelled the economic growth of today's industrialized countries in the last century.

—Sheikh AHMAD FAHAD AL-AHMAD AL-SABAH,
Minister of Energy for Kuwait, January 27, 2005

Deficit spending is simply a scheme for the confiscation of wealth. Gold stands in the way of this insidious process.

—ALAN GREENSPAN, 1966

In the 1970s the OPEC countries could reasonably believe that their decisions controlled oil prices.

Since then, we have seen the emergence of a world oil market in which the increasing predominance of oil spot and futures markets have become determinative not only for oil pricing but also to determine exactly how world supply and demand get matched together. As we proceed through the first decade of the twenty-first century, world oil economics, not geopolitics, are the determinant factor in how much a barrel of crude oil costs and where that barrel of crude oil will ultimately end up. Today the futures markets price into the cost of oil the

impact of a hurricane or war far quicker than any nation, legislator, or bureaucrat can comprehend the market or the political dynamics of what is going on.

Regardless what peak-production theorists say, the world oil supply has today reached record levels. The growth of oil reserves shows every sign of increasing indefinitely, not slowing down and diminishing to the point where we run out of oil. Because our mind-set has been dominated by defeatist thinking, we have not truly appreciated the changing dynamics of the expanding marketplace we are experiencing worldwide.

As we will see, the United States today is less in control of world oil markets than it was in the past, not more in control. We are in an increasing economic and political stranglehold, especially as we allow the dollar to be free floating and completely divorced from any backing by gold. The world oil market has grown dramatically over the last thirty-five years, and its dynamics have moved into new dimensions we are only beginning to understand. Still, notions persist that governments are able to control the direction of the world oil markets. We see this idea persisting in the charge that the United States invaded Iraq in 2003, not to fight terrorism, but to seize oil.

WHY THE POLITICAL LEFT SEES THE IRAQ WAR AS A GRAB FOR OIL

As the political Left sees geopolitics, President George W. Bush attacked Iraq to control oil, regardless what other justifications the administration may have articulated. Michael Klare, a professor at Hampshire College in Amherst, lays out the charge from the Left in his book *Blood and Oil*. He begins the analysis by expressing his view that the United States has no alternative but to rely increasingly upon the Middle East for the oil we need to keep our industrial economy and perpetuate our lavish lifestyle:

Our biggest problem, of course, is our growing reliance on the oil kingdoms of the Persian Gulf. No matter how hard the United States tries to diversify its energy imports by turning to producers in other regions, it

will still need to acquire more oil from the Gulf, the only region whose reserves are large enough to satisfy the U.S. and international demand.¹

Klare's reference to international demand includes China and India, two countries whose oil demands are surging, putting pressure on the world oil supply, thereby squeezing the United States' ability to get cheap oil reliably into the future. Klare, of course, buys wholeheartedly into the idea that the world must eventually run out of oil:

Experts disagree as to when the world's oil fields will attain maximum (or "peak") production and begin an irreversible decline—some say this will occur by 2010, others in the second and third decade of this century—but *all* acknowledge that the planet's original petroleum inheritance has been substantially exploited and a reduction in output is inevitable.²

Although we disagree that the world's running out of oil is inevitable, we do admire Klare's adherence to conventional wisdom.

Klare then argues that military intervention in the Middle East, ultimately by Russia and China, as well as the United States, is also inevitable because each country will want to protect its claim on the last available reserves of oil as the supply dwindles to zero. He foresees a coming era in which the United States, Russia, and China compete militarily in the Middle East, generally avoiding a direct clash but fighting through surrogates, each fanning the "flames of regional conflicts" in a way that will increase "the potential for major conflagrations."³ His solution: we should change our mind-set and use less oil, just as we have decided that smoking tobacco is bad for our health.⁴

A central point of Klare's book is that our military involvement in the Persian Gulf region has been motivated not so much by a desire to attack terrorism but to secure our continuing oil flow. Klare says as much directly: "In fact, it is getting harder to distinguish U.S. military operations designed to fight terrorism from those designed to protect energy assets." Moreover, he expands the argument to contend that our desire to protect oil flow also explains U.S. policy in Latin America and around the world.

American forces will speed overseas to protect oil fields, pipelines, refineries, and tanker routes more and more frequently, and they will often encounter enraged local populations. The American military can help deter attacks on vital oil facilities and ensure the continuing flow of petroleum, but it can never guarantee that our rising demand for imported oil will be satisfied. All that is certain is that we will pay for it with an increasing sacrifice of blood.⁵

Thus the title of Klare's book, *Blood and Oil*, accurately expresses his core thesis—America is a military power acting worldwide not in defense of freedom but in pursuit of oil.

The argument of the Left is based upon the fossil-fuel and peak-production arguments we have challenged throughout this book. The Left has repeated this argument so often and with such conviction that its assumptions have been accepted as conventional wisdom. The argument goes like this: America is addicted to oil. But since oil is bound to run out, we are locked in a battle we can never win. Still, we cannot stop ourselves from exercising our military might to secure our hold on the world's last remaining oil reserves. We don't care that our military intervention in the Middle East to seize oil means that the Islamic world has no choice but to hate us. So we bring terrorism upon ourselves. By intervening militarily in the Middle East, we invite the hatred of Americans by radical Muslims.

The self-defeatism in the argument is exceeded only by the argument's self-blame. Since the war in Vietnam began some forty years ago, the political Left has been trying to demonstrate that America is an imperialistic power seeking colonial gains. In criticizing the 2003 war in Iraq, the political Left acts as if it has finally found its ultimate proof.

Nowhere does the Left explain why the world now has more proven oil reserves than ever before in history. Nor will the Left relax its extreme attack against the U.S. oil business. The Left is locked into arguing that any expansion of oil drilling offshore or in Alaska will have completely unacceptable environmental consequences. If oil is truly abundant, as we suggest, and if responsible exploration can be conducted without causing environmental damage, then the United States does not need to invade

foreign countries for oil. The Left needs to block oil exploration and production in the United States in order to self-fulfill the core argument against oil.

But the Left cannot tolerate those who argue that oil might be abundant or that the United States might be able to discover enough new oil to decrease significantly our oil dependency. What is the global-warming hoax all about if not a plea to stop burning carbon-based fuels? Conservation to the political Left equates with using less energy, which in turn translates to a reduction in what the Left sees as an indulgent and selfish materialistic lifestyle made possible by industrial enterprises that burn carbon-based fuels. The Left operates with a political understanding of oil.

The reality is that U.S. oil companies have not moved into Iraq to seize and operate the oil fields. While the political Left will probably discount all Bush administration statements to the contrary, the goal was to fight terrorism, not to seize oil fields. Since Saddam Hussein was deposed from power, the United States has worked to reestablish a self-determined Iraqi government that is sovereign over Iraqi politics. The United States does not have a history of establishing colonies, and the day is approaching when American military forces will begin withdrawing from Iraq. Should the Iraqi government decide that U.S. forces should leave Iraq, we will most certainly pull out, just as we did recently in Saudi Arabia. Still, the Left continues with its political agenda, pressing forward with determination to argue that the only reason we attacked Iraq was for oil and that all statements to the contrary are subterfuges.

Iraqi oil production in January 2003, before the war, averaged 2.6 million barrels per day. This dropped sharply in the period between March and July 2003, when the war was at its most intense level. The 2004 production level for Iraq averaged just over 2 million barrels per day, not quite back to the prewar level, but recovering. After the 2003 war, we resumed importing oil from Iraq. In 2004 we imported about 652,000 barrels of oil per day from Iraq, somewhat more than half of the 1.16 million barrels of oil per day Iraq was exporting worldwide. Iraq in 2004 exported to a large number of countries in addition to the United States, including Canada, England, France, Germany, Italy, Japan, and South Korea.⁶

If the United States attacked Iraq for oil, why didn't we just stabilize Iraq's oil industry and ship all the oil to the United States? Or, with our technology, why didn't we simply drill out as much Iraqi oil as possible and ship it to the United States as fast as we could? After all, peak-production believers would argue that Iraq is going to run out of oil sooner rather than later. So taking all Iraq's oil now, while we have the opportunity, and shipping it back to the United States would seem to be the logical consequence if the United States were really just an imperialistic power after colonial conquest and gain. Following the argument of the Left to its logical conclusion, the United States should have drilled Iraqi oil to the last drop, sent it to America, then brought home the troops. Who would care what would happen in Iraq after the oil was gone? Isn't that the point the Left wants us to believe?

IRAN'S SUCCESS DESPITE SANCTIONS

The United States has had Iran under economic sanctions virtually since the 1979 revolution, sanctions even maintained by the Clinton administration. For this reason, we import no oil or natural gas from Iran. This has not stopped Iran, however, from marketing its available oil and natural gas to others. Iran has found ready buyers in many countries, including China, India, and Japan.

After the 1979 revolution, Iran's oil industry was nationalized under the control of the state-owned National Iranian Oil Company (NIOC). Foreign investment in Iran since 1979 was hampered by the Iranian constitution, which prohibits granting direct equity stakes in oil production activities to any individual person or corporation. Then, in 1987, a new petroleum law permitted the Ministry of Petroleum to get around this provision by allowing buy-back contracts that confer what amounts to ownership over oil fields where investors provide capital to develop the resources. But relying on the word of the mullahs has proven problematic. Iran is a theocracy, and if the ruling clerics change their mind, there is no legal recourse. Still, over the last two years, China, Japan, and India have made a series of deals to develop Iranian oil fields.

Currently, Iran is producing about 3.9 million barrels of oil a day, down from the pre-revolution 1974 high of 6 million barrels per day. Iran's oil industry suffers greatly from outmoded equipment and low levels of capital investment, but in the last two years the clerics ruling Iran have grasped a great international opportunity. Realizing that oil demand was surging in countries such as China and India, the mullahs have negotiated deals with an eye toward attracting additional investment. Since 2003 the mullahs have inked a number of oil deals, not only with China and India, but also with Japan, a country with virtually no oil reserves of its own. In her March 2005 trip to India, Secretary of State Condoleezza Rice appealed to Indian Foreign Minister Natwar Singh to drop plans to build a \$4 billion pipeline designed to bring natural gas to India from Iran by crossing over Pakistan. Singh rejected Rice's request, noting that India needed the natural gas.⁷ So far the White House has been unsuccessful in discouraging other countries from dropping planned oil or natural gas investments in Iran.

The mullahs are heavily dependent upon oil-export earnings to prop up their otherwise failing economy. Oil represents approximately 80–90 percent of total export earnings and some 40–50 percent of the government budget. With oil prices surging, Iran has benefited from these wind-fall prices. With oil at \$50 per barrel and with Iran exporting some 3.9 million barrels per day, the mullahs' state-owned oil company is raking in nearly \$200 million a day in gross oil revenue. This revenue is not shared broadly with the Iranian people, who suffer from unemployment and underemployment, a suffering made more oppressive given the mullahs' brutal suppression of internal dissent.⁸ Any capital the Iranians receive to develop their oil and gas markets gives them additional resources with which to enrich themselves, to prop up their failing economy, to fund terrorism, and to pursue their nuclear ambitions.

In 2001 the state-owned Japan Bank of International Cooperation gave Iran a \$3 billion loan despite strong objections from the U.S. Department of State. Several Japanese companies have also made major private investments to claim a stake in the development of Iran's abundant oil fields. The U.S. government argued with Japan to no avail that Iran

was supporting international terrorism by funding groups such as Hezbollah in Lebanon and that the mullahs were conducting a clandestine nuclear weapons program. In the end, Japan's need for oil overrode any international security concerns, and the mullahs received a huge capital investment to enrich themselves further and to keep their failing economy afloat. By 2004 the Iranians had completely drawn down on the first \$3 billion loan from Japan and were negotiating a second loan.⁹

Iran and China have also signed several multibillion-dollar deals in which China has agreed to purchase oil and liquid natural gas from Iran. Deals have been negotiated between the two countries by which China has agreed to pay as much as \$100 billion for oil and gas purchase contracts for as long as twenty-five years. This Tehran-Beijing axis sits alongside Iran's growing relationship with Russia.¹⁰ In 2004 the Russians completed the construction of Iran's first nuclear reactor, at Bushehr, some 750 miles (1,200 kilometers) southwest of Tehran, on the Persian Gulf. In 2005 the Russians are expected to supply the Iranians with the necessary nuclear fuel to make the Russian-built reactor operational. Arguably, the major accomplishment of the U.S. embargo against Iran has been to remove U.S. companies from the competition for Iran's abundant oil and natural gas reserves.

What is emerging is a set of Iranian alliances that tie the mullahs increasingly into the mainstream of world economics. With some \$200 million a day in oil revenue, the Iranian theocracy has abundant resources to buy the world's top economic, legal, and public relations talent. Despite their continued pleas that the only purpose of their nuclear program is for peaceful purposes, the U.N.'s International Atomic Energy Agency (IAEA) has found repeated violations. The U.S. government's concerns that Iran is sponsoring terrorism worldwide and that the mullahs intend to have the capability of building nuclear weapons are unfortunately well founded. We must face the reality, however, that a U.S. oil embargo against Iran has had almost no economic impact on Iran, given the current development of the international market for oil and natural gas.

China, India, and Japan have more than enough demand to purchase all the oil Iran can supply. Even more important, China, India, and Japan

have sufficient capital resources to sustain the mullahs in power for years to come. Thus Iran is not suffering a shortage of oil revenue, despite the U.S. embargo. Moreover, the mullahs have established an intricate network of offshore contracts for their own benefit. Through these offshore contracts, they rake percentages of oil contracts into their bank accounts in Syria and Switzerland. If we could investigate these payments directly and honestly, we should not be surprised to find an oil-for-food type scandal through which the mullahs reward their international trade partners and fellow terrorists around the world. Nor should we be surprised to find the names of prominent Europeans included on the list.

While the United States has not been able to shut Iran out of the world's oil markets, Iran ironically can still affect the price of oil in the United States, even though we buy no oil from Iran directly. As Iran sells to foreign buyers, that oil flows into the world market, increasing the overall supply. Without Iranian oil, international supply would be less than it is now. And one result of that diminished supply would be an increase in price as the Chinese, Indians, and Japanese would be forced to look elsewhere for oil.

As Iran's position in the world oil marketplace grows, we should expect its political influence to grow as well. As we saw with Mexico and Canada, their national political agendas became increasingly important to the United States as we imported more oil from them. Unless Iran renounces its support for terrorist groups and reverses its determination to spread the radical Islamic revolution worldwide, we may well see in Iran the emergence of the world's first terror-supporting nation as a superpower in the oil and natural gas marketplaces. If Iran's oil and natural gas superpower status is strengthened with a nuclear-weapons capability, the consequences should be frightening for all free countries, including the United States and Israel. We and Israel have already been attacked by radical Islamic extremists whose determination to attack us shows no sign of letting up. In 2004–5 we have seen terrorist attacks in Egypt, Great Britain, Saudi Arabia, and Spain. Radical Islamic extremists will gain considerable strength if they receive additional support from a nuclear Iran, especially if Iran has countries like China, India, and Japan

investing substantial amounts in its energy industry infrastructure and buying the oil and natural gas that are produced as a result. Will Iran be able to impose its political agenda on the world to an increasing extent as its importance as an oil exporter grows in the world marketplace? Unfortunately, the answer is probably yes.

With Iran having close ties to both China and Russia, its alliances with India and Japan take on a new dimension. Iran is quietly using oil resources to build an Asian network of relationships that exclude the United States. Therefore, every drop of oil that Iran pumps has a geopolitical impact that can reach well into the next several decades, continuing to tighten the stranglehold we Americans face. Our increasing dependence on foreign oil makes us more vulnerable to disruptions in the world oil marketplace. And Iran today is the second largest producer of oil among the OPEC nations. With virtually unlimited investment coming from countries like China, India, Japan, and Russia, and with more Iranian oil and gas being discovered by new methods of exploration, what is the limit for increased production of oil and natural gas in Iran? Iran's emergence as a major supplier of oil and natural gas has dramatically changed the world's energy market, with the United States positioned on the sidelines, objecting but unable to stop the market forces from moving ahead to the advantage of the mullahs and their oil-importing partners.

The mullahs' abysmal human rights record at home and their documented support of terrorism abroad may be morally abhorrent, but these records are no barrier to the mullahs engaging in the international oil and gas business. Short of war, the mullahs may be unstoppable. The conclusion again is clear: the world oil marketplace, not the political wishes of the United States, determines what Iran can accomplish economically, possibly even politically.

THE WORLD OIL MARKET DOUBLES IN SIZE

Since the early 1970s the world marketplace has increased more than 60 percent, despite constant warnings that we have hit peak oil production and that we are running out of oil. In 1970 the world produced approxi-

mately 49 million barrels of oil per day; in 2004 the world average was approximately 83 million barrels per day.¹¹

We have a tendency to think that a larger market operates just like a smaller market, only on a grander scale. Here we risk ignoring yet again an often overlooked mathematical principle: a difference in scale is often a difference in phenomenon. A simple illustration will make the point. A bumblebee is able to fly because of the particular aerodynamics of the animal. If you increase the size of the bumblebee by a great factor, making the bumblebee maybe ten times larger, or perhaps one hundred times larger, the bumblebee cannot lift off the ground. Even if every part of the bumblebee is increased proportionately, the wings at ten times or one hundred times larger are not sufficient to lift the greater mass of the bumblebee's larger body. There are many illustrations of the principle. The "Spruce Goose" that Howard Hughes built was barely able to lift off the ground. Even with more propellers, an airplane this large could not fly. Huge cargo aircraft required a totally different design, one that had to await the invention of jet engines and lighter metals that could be used in the body construction of the aircraft.¹²

If a difference in scale is a difference in phenomenon, then a world oil market that has increased more than 60 percent in the past thirty-five years may well be a market whose dynamics and internal laws of operation are significantly different than those which operated in 1970. No nation today, not even the United States, can control worldwide oil markets.

In 1973 the OPEC nations imposed an oil embargo with a reasonable expectation that by reducing the supply of oil available, they would cause a severe shortage that would bring the United States to its knees and force it to abandon Israel. As we have seen, the price controls imposed by Nixon were probably the main reason we experienced long gasoline lines in 1973. The Arab oil embargo removed some 5 million barrels of oil a day from the world's supply; only about 1 million barrels a day were made up by increased production from other nations. Oil jumped dramatically in price. In 1972 the price of crude oil was about \$3 per barrel, and by the end of 1973 the price had increased to \$12 per barrel. One analyst observed correctly: "If there was any doubt that the ability to control oil

prices had passed from the United States to OPEC it was removed during the Arab Oil Embargo. The extreme sensitivity of prices to supply shortages became all too apparent when prices increased 400 percent in six short months.”¹³

The main effect of the Arab oil embargo was that the OPEC nations themselves lost revenue they could not afford to lose. The Arab oil embargo officially began on October 16, 1973, when Abu Dhabi, Iran, Iraq, Kuwait, Qatar, and Saudi Arabia decided to raise oil prices 17 percent to \$3.65 a barrel and also to cut production. On March 17, 1974, only some five months later, the OPEC countries announced the end of the embargo. The embargo had virtually no impact on the U.S. policy of support for Israel.

Looking at the U.S. oil import data from 1973 and 1974, the oil embargo had an impact on overall U.S. imports. In October 1973 the United States imported approximately 6.6 million barrels of oil per day; in December 1973 the figure was 6.3 million barrels per day. From January through March 1973 the figure was more like 5.3 million barrels per day, but by April the number was back to about 6 million barrels a day, and by May the number was back to 6.5 million barrels.¹⁴ Had the embargo lasted longer, additional suppliers would have entered the market. The U.S. recession that followed the oil embargo also had an impact in keeping oil prices relatively stable through the remainder of the 1970's.

Never again was OPEC able to exert such a major impact on oil prices. The next big spikes in oil prices occurred around political events, the disruption in Iranian oil caused by the exile of the Shah and the rise to power of Ayatollah Ruhollah Khomeini during the Iran revolution of 1979, followed by the Iran-Iraq war which began the next year. Through the 1980's, oil decreased in price as world oil production increased and futures markets such as the New York Mercantile Exchange (NYMEX) were formed. The next oil spikes awaited more political events, such as the invasion of Kuwait by Iraq in 1990, the 9/11 attack on the World Trade Center and the Pentagon, and the 2003 invasion of Iraq. Even as the second Iraq war started in 2003, oil was still averaging under \$30 per barrel.

In the 1980's and 1990's OPEC made many different decisions to in-

crease or decrease production, yet without any clear demonstration that changes in OPEC policy could directly influence world oil prices. Looked at in retrospect, many of the OPEC decisions in this period appear reactive, more an attempt by OPEC to boost their profits than a clear ability of OPEC to determine oil pricing directions. Since 1973, OPEC “has seldom been effective at controlling prices.”¹⁵

The oil price spike of 2004 seems more related to political uncertainty than to fundamental changes in the world configuration of supply and demand. What this reflects is the dynamics of a world oil marketplace that has grown to such a dimension that no one government or group of governments can fundamentally impact price by taking unilateral action to increase or restrict supply. As we have seen, refinery limitations in the United States are the restraint that today will keep U.S. gasoline prices high, even if OPEC were to dramatically increase the production of crude oil.

Today’s world oil marketplace is sufficiently large and complex that futures markets can be determinative of pricing. Futures markets can factor a whole range of market impacts into price within a matter of moments. Hurricanes, political disasters, uncertainties due to labor strikes, terrorism attacks, decisions by governments to increase or reduce oil production—all these and many more variables are weighed instantly in the oil prices quoted by futures markets. The efficiency of the NYMEX and London’s International Petroleum Exchange (IPE) to determine oil prices is virtually unchallenged in today’s oil markets. OPEC, the U.S. government, and oil producers worldwide all key off NYMEX and IPE prices, the same way industries and governments key off New York Stock Exchange (NYSE) prices to value corporations, large and small, and to monitor major market movements.

A change in scale is a change in phenomenon in the world oil markets. We should note here that the NYMEX and IPE are not behaving as if our running out of oil were imminent. We may have seen rising oil prices in the 2004 and 2005, but we have not seen panic increases. Nor is the increase in world oil prices necessarily bad. At higher price levels, oil that may otherwise be left in the ground may economically be able to be

developed. Besides, the United States has alternatives. If we want to see oil prices decrease, we should open up domestic oil exploration in an effort to increase available supplies. Any dramatic increase in U.S. oil reserves due to the discovery of new oil fields would most likely decrease world oil prices.

Higher world prices for oil will certainly stimulate new oil production somewhere; ultimately that production will enter the world market, where the result most likely will be to place downward pressure on the price of oil. At higher prices, alternatives to hydrocarbon fuels also become more attractive. The cost of alternative energy sources, such as nuclear power, may today not be able to compete economically with the still relatively low price of oil and natural gas. The same may not be true if oil and natural gas become much more expensive in the future.

The stranglehold we feel from world oil dependence is largely one we have imposed upon ourselves. The solution is not conservation or the reduction in our industrial economies. The solution lies in attacking the arguments of the conservationists and environmentalists directly on the basis of scientific evidence and in proceeding to develop our oil supply capabilities at home as well as worldwide. We have passed the point where government decrees or price controls will do anything but make us look foolish. At the risk of repeating ourselves, the empirical evidence is that the world today has more proven reserves of oil and natural gas than ever before. Despite the cry from the political Left, we are nowhere near running out of oil. The world oil market is larger, more robust, and more dynamic than ever.

THE GROWING IMPORTANCE OF THE OIL SPOT AND FUTURES MARKETS

Prior to 1970, negotiations among the major private sector companies such as Standard Oil of Jersey (Exxon), Standard Oil of California, the Texas Company, and Royal Dutch Shell set the price of oil. Beginning in the 1970s the power to control supplies and determine prices moved from private companies to the governments of major oil-producing

countries.¹⁶ Today, control of oil prices has largely passed to the internal dynamics of the world oil market itself. Oil companies and governments, even OPEC, are all increasingly subject to the laws of supply and demand as played out on international markets.

In the last few years the spot transactions and futures markets have become increasingly important.¹⁷ A spot transaction is a one-time agreement to buy a particular quantity of oil at a specified price with no requirements that any future purchases ever be made. Oil refiners, for instance, go into the spot market to purchase additional crude oil when gasoline prices are high. Spot markets have developed over various types of oil: crude oil as distinct from gasoline, or low sulfur crude oil as distinct from high sulfur crude oil. Spot markets have also developed for different geographical markets, such as New York Harbor for the Northeast, or Chicago for the Midwest, Rotterdam for Northwest Europe, and Singapore for Southeast Asia. Any oil company or refinery can go to the spot market to buy or sell oil.

A futures market operates as a complex set of contracts to buy and sell a specified commodity at a specific time at a specified price. A futures oil contract involves a promise by the seller to deliver a quantity of oil to the buyer at a particular date for a specific agreed-upon price.

In addition to futures contracts, the oil market has also developed options contracts. Oil is not actually delivered under a options contract. Instead, third parties buy and sell options contracts. A losing options contract is one that bets incorrectly on the market price for oil at the expiration date; a winning options contract bets correctly on the market price at the expiration date. Options contracts act as speculative financial bets and are traded actively by third parties before expiration. The holders of the oil futures contracts make or lose money depending on their positions; the writing of futures contracts is a way for oil producers to hedge their positions.

The New York Mercantile Exchange (NYMEX) and the International Petroleum Exchange (IPE) in London are the largest worldwide markets for the trading of oil futures contracts. And recently oil has become the most actively traded commodity in the world. The price of oil is set today

by oil futures trading on the IPE and NYMEX, not in OPEC meetings, not in ExxonMobil boardrooms, not in price-control committees established by the U.S. government. When oil prices are quoted, the quotes come from the futures exchanges, and all world buyers and sellers of oil use the futures exchanges to determine price.

With spot transactions and futures contracts becoming an active part of the oil business, the market has changed. In the past, specific oil producers sold to specific oil buyers. Today oil trading has moved into the hands of investors and speculators. Much like the shares of any company, such as IBM or even ExxonMobil, prices are determined by the buying and selling of stock on Wall Street. In the same way, the price of oil is determined by investors and speculators buying and selling futures contracts on the NYMEX and the IPE.

In simple terms, oil is fungible—once it enters the system, we have a hard time telling where it came from. Oil in a particular tanker may end up being bought and sold several times before it actually hits a gas pump. Financial intermediaries, more than governments or even the oil companies themselves, set oil prices based on their ability to shuffle oil supplies to meet demand wherever that demand is found. Oil companies anywhere in the world can find buyers in the world market, just as refiners can buy or sell oil depending on the grades of oil they need, what they have in supply, and what type of oil product they currently believe will be the most profitable to refine. Undoubtedly, despite the U.S. embargo, some Iranian oil enters the United States due to this fungible nature. Once oil enters the world market, it is difficult to determine its origin. Spot contracts purchased on the world market can conceivably be delivered even to the United States with supplies that originated in Iran. Very possibly no one, not even the U.S. government, could trace that oil back to Iran with a degree of certainty.

One way to understand this is to realize that while the United States is now a net importer of oil, we still continue to export oil. According to data from the Energy Information Administration of the U.S. Department of Energy, the United States in 2004 exported more than 1 million barrels of oil per day, even though our net imports averaged approximately

11.851 million barrels per day.¹⁸ Why would we export oil when we import so much oil? The answer derives from the many individual decisions made by U.S. oil companies and refiners operating on the world oil market. When U.S. oil companies have an excess supply of oil, or when price opportunities present themselves on the spot market, U.S. oil companies are happy to sell oil abroad, even though at the same time they are also buying oil from overseas.

Increasingly, we are all in a world oil market. Political arguments that we went to war in Iraq to gain control of Iraqi oil miss the point. U.S. oil companies buy and sell oil on the world market. If a U.S. oil company can get more profit by selling its oil to someone else, then the sale is a rational decision. When that same oil company stops buying from a foreign producer because domestic sources of production are cheaper, the result becomes a pressure on the international oil market for overall prices to fall. When worldwide oil prices go up, virtually all buyers of oil suffer and virtually all sellers of oil benefit. The consequences on buyers and sellers reverse when the price of oil goes down. The development of the NYMEX and the IPE has virtually set this rule in stone such that markets rule, not oil companies or governments.

THE U.S. DOLLAR IS A COMMODITY JUST AS OIL IS A COMMODITY

When President Nixon in 1971 closed the gold window at the U.S. Treasury Department, he took the dollar completely off the gold standard, completing the process that began with Franklin D. Roosevelt in 1933. The result was that the U.S. dollar became a commodity.

Traditionally, the world oil market has traded in dollars. As we continue to import an increasing amount of oil, our international suppliers are being forced to receive an increasing amount of U.S. dollar reserves. The value of these foreign currency reserves depends in turn upon the value of the dollar. As a result, we are seeing increased anxiety worldwide that the quantity of dollar holdings currently in the foreign exchange balances of our oil exporting partners may be getting uncomfortably large.

In turn, financial problems may be looming for the U.S. dollar in the immediate future.

Since the dollar can no longer be exchanged for gold, the dollar's value is independent of the price of gold. Today the dollar is a commodity, just like oil, wheat, copper, and pork bellies. Thus the price of a dollar is determined every day by the currency markets. The dollar is primarily traded on a market known as *forex*, an abbreviation of *foreign exchange*. The forex market is not a formal market like the New York Stock Exchange (NYSE). Instead, the forex consists of a network of "over the counter" traders from major commercial and investment banks, all of whom are networked. A wide range of parties trade currencies on the forex—importers and exporters, managers of major investment or pension portfolios, mutual fund managers, and foreign exchange brokers, even private speculators—all these constitute the complex group of participants who enter the forex every day to buy and sell money.¹⁹

More than \$1.5 trillion in various currencies around the world are traded every day. Still, the exchange has "no central trading floor where buyers and sellers meet. Most of the trades are completed by commercial banks and forex dealers in the U.S. and abroad using telephones and computers."²⁰ The forex operates twenty-four hours a day, beginning at 00:00 GMT (Greenwich Mean Time) on Sunday afternoon until 10:00 p.m. GMT on Friday—a period that roughly stretches in the United States from Sunday afternoon until Friday afternoon. Every day worldwide currency traders make and lose millions of dollars on the forex, depending upon the skill and luck with which they trade their currency positions.

Here is how the Federal Reserve Bank of Chicago describes the daily international operation of the forex:

The forex market operates worldwide, 24 hours a day. Traders in Australia and the Far East begin trading in Hong Kong, Singapore, Tokyo, and Sydney at about the time most workers in San Francisco are going home for supper the previous evening. As the business day in the Far East closes, trading in Middle Eastern financial centers has been going on for a couple of hours, and the trading day in Europe is just beginning. By

the time the New York business day gets going in full force, it is almost time for early afternoon tea in London. Some of the large U.S. banks and brokerage houses have an early shift to minimize the time difference of 5 to 6 hours with Europe. To complete the circle, West Coast financial institutions extend "normal banking hours" so they can trade with New York or Europe on one side, and with Hong Kong, Singapore, or Tokyo on the other.²¹

Currency is traded for many business reasons. A company doing business in a particular country may have a need to purchase the currency of that country. A government may not want to hold reserves obtained through foreign trade balances in a particular currency, so it trades that currency for another currency. Many traders also use this market effectively to hedge against future declines of any given currency.

Speculators also trade currencies, trying to capture small pricing differences that may exist only for seconds between one exchange or another. This speculative trading is termed *arbitrage*, and with skill, millions can be made by recognizing these minor inefficiencies that exist in the instants it may take for one exchange to adjust the price of a currency to reflect the price of that currency on other exchanges. The entire process is complex, expert, and fast. Huge amounts of money move around the globe electronically with no paper currency ever changing hands.

A very active options market has developed for foreign currency exchange. The Chicago Mercantile Exchange has created an options market in forex, so participants in forex can buy and sell options contracts to exchange a specified currency at a specified price on a specified date. These options contracts were developed to allow major institutional currency exchange participants to hedge their positions on current currency exchanges by going long or short with bets on the future value of a particular currency.

Only experts are advised to participate in forex options contracts. The nature of options transactions is not common sense, simply because most ordinary consumers are accustomed to buying or selling today, but they are not accustomed to buying and selling an option to buy or sell in

the future. As we saw with oil options, few forex options contracts ever result in currency actually changing hands. A forex option is "in the money" if the future bet made by the purchaser turns out to be right. An "in the money" options contract can be sold to another investor at a gain in price prior to the delivery date specified. An options contract that is not "in the money" is worthless, so it generally expires with no consequence other than the investor loses whatever sum of money was paid to purchase the options contract.

About half of all forex transactions (including future transactions and options transactions) are made in dollars. The dollar is the most actively traded currency in the world. Moreover, nearly all other currencies are quoted in dollars, so the dollar becomes the "pegging" currency by which all others are measured. Still, the dollar either increases in value or decreases in value depending upon how much of another currency the dollar is able to buy. Thus, when the dollar buys 100 yen, it is worth less than when the dollar buys 120 yen. Even at 120 yen, the dollar might be considered weak, for instance, if the historical high of the dollar (or at the high in recent months) bought 125 yen.

The key point is that the value of the dollar on the forex is floating. Each instant of trading is an opportunity for the dollar (and all other currencies) to be repriced simultaneously, depending upon the estimates traders are making of the currency's underlying strength. Even measuring a currency's underlying strength is problematic. Currency traders have to anticipate the purchasing power of the dollar (or any other currency). Estimating a currency's purchasing power demands making judgments about whether the underlying domestic economy of that currency is in economic boom or recession, whether the country is experiencing inflation or turmoil. Terrorism, war, and many other factors may affect the purchasing power of a currency. The value of a currency, including the dollar, depends to a large extent upon the confidence the international market has in the dollar. To a large extent, confidence has replaced gold as the key element backing the dollar.

Many foreign countries end up holding dollars because the United States buys more from that country than we export to them. If we import

15 million barrels of oil a day at a price of \$50 per barrel, then \$750 million goes overseas every day to the countries that sell us oil. Exporting countries end up holding large amounts of U.S. currency. Ultimately, oil exporters ask the all-important question, "What are these dollars worth?" Since the dollar has become a commodity, there is no fixed value of the dollar. The value of the dollar fluctuates moment to moment through the trading day as its price in relation to other currencies goes up or down. Nor can the dollar be turned in to the U.S. Treasury and redeemed for gold. The dollar today is worth only as much of another currency as the dollar will buy right now. Tomorrow may be dramatically different.

This puts the foreign holders of U.S. dollars at considerable risk. When the dollar was pegged to gold, the U.S. Treasury could only print up as many dollars as our current gold reserves permitted. With the dollar removed from the gold standard, as it is today, the U.S. Treasury has no fixed limit regarding how many dollars it can issue. The U.S. Treasury may simply decide to issue additional billions of debt, such as Treasury notes, which in turn are sold to institutions and foreign holders of dollars. If the U.S. Treasury takes the path of issuing more debt, we risk devaluing the dollar, making it worth less in relation to other currencies.

Oil is a commodity in that its value changes daily. Likewise the dollar is a commodity whose value changes daily in relation to other currencies.

Oil is not sold today for money that can ultimately be traded for gold. Gold and money are not interchangeable. Oil is sold for dollars, which has a floating value that depends on price fluctuations of the dollar on the forex. One commodity (oil) is exchanged for another commodity (dollars). If the dollar decreases in value, exporters of oil take a loss in their dollar currency holdings. Simply put, the exporters of oil are at a constant risk because they sold their oil for dollars that could become worth less than the dollar was worth when their oil was sold. When foreign exporters sell their oil to the United States, they receive dollars that hold no promise they can be redeemed for any fixed value, because redemption of dollars in gold is no longer permitted. And that is the problem: oil exporters take a risk the moment their oil is sold. One commodity, oil, is a

tangible product that is being exchanged for another commodity, dollars, that is neither tangible nor fixed in value.

Historically, the dollar has lost value dramatically. A standard measure of value is the Consumer Price Index (CPI), which measures a bundle of goods and services in terms of price over time. The U.S. Bureau of Labor Statistics, the government department that is responsible for the CPI, pegs the period 1982–84 as the standard CPI measure of what \$100 would buy. According to this measure, in 1913 it only cost \$9.90 to buy what in 1982–84 cost \$100.00. Clearly the dollar depreciated over the seventy years between 1913 and 1982–1984. Moreover, the rate of depreciation since 1982–84 has increased. Some twenty years later, in 2004, it took \$189.00 to buy what in 1982–84 cost only \$100.00. Consider this: In 1971, the year the United States closed the gold window, it took only \$40.50 to buy the same bundle of goods and services that cost \$100.00 in 1982–84. By 2004 the cost was \$189.00—an increase from \$40.50 to \$189.00 only thirty-three years after we closed the gold window.²²

Let's look at the data from a slightly different angle. How much was a 1971 dollar (the year the United States closed the gold window) worth in 2003? Measured against the CPI, you would have to have \$4.55 to buy in 2003 what \$1.00 bought in 1971. Measured against the gross domestic product per capita, you would have to have \$6.97 in 2003 to have what you had with \$1.00 in 1971.²³ Again, the result is the same. While the dollar has lost significant purchasing power over time, a strong argument can be made that the dollar has depreciated at an exponential rate since 1971 when the United States closed the gold window.

Since 1971 the U.S. Treasury has also been issuing debt at an increasing rate. The national debt in 1919 at the end of World War I was \$27.4 billion. In 1971 the national debt was \$449 billion, about sixteen times greater than the 1919 debt fifty-two years earlier. By 2003 the national debt was \$6.8 trillion, about fifteen times greater, this time accomplished in only thirty-two years.²⁴ In August 2005 the national debt had risen to \$7.85 trillion, up more than \$1 trillion in less than two years. As we issue more debt, the supply of dollars available on the world market grows dramatically. We are setting up a system where anyone who holds U.S.

currency as a foreign reserve will inevitably see the purchasing power of those dollars diminish, just as anyone who holds foreign debt will most certainly get paid back in dollars that are worth far less than the dollars borrowed in the first place. To put the point even more bluntly: anyone who holds dollars ends up losing.

In contrast, before we closed the gold window in 1971, the official price of gold was \$35.00 an ounce. In 2004 gold traded as high as \$428.00 an ounce. In 1975 gold became a tradable commodity in America, with the price fluctuating according to the gold market. The increase in the price of gold reflects a key point. Dollars are anything but scarce, and their value has decreased dramatically. Gold remains truly scarce, and its value has increased in terms of dollars.

One could argue that the buying power lost by the dollar has remained constant in gold. What one hundred ounces of gold bought in 1975 is virtually what one hundred ounces of gold will buy today. Gold is a fixed value whose buying power remains constant. In 1920 a twenty-dollar paper bill or a twenty-dollar gold piece would purchase a good suit, shirt, and tie in a men's store. In 2005 a twenty-dollar bill would barely buy a new tie, but a twenty-dollar gold piece in any condition is worth five hundred dollars, which would still buy a good suit, shirt, and tie. The dollar has depreciated in value. Gold has not.

In August 1976, one year after gold was made available for purchase by American citizens, gold traded at \$105 an ounce. In January 2005 gold was as high as \$428 an ounce (as low as \$420 an ounce). So gold increased about 4.2 times in value from 1976 to 2005. Viewed against the dollar in the same time period, gold maintained its buying power—the price of gold went up because the buying power of the dollar went down. Gold price increases functioned to offset the losses in purchasing power suffered by the dollar. An ounce of gold in 2005 still bought what an ounce of gold bought in 1976, even though the dollar prices of goods increased (as a function of the dollar's diminishing purchasing power).

Prior to 1971 oil exporters were hedged (protected) because their international settlements in dollars were ultimately backed by gold. Now oil exporters must factor in additional costs to hedge their foreign

currency holdings in dollars. The hedge can be accomplished through a variety of sometimes complex strategies, including purchasing other currencies as a portion of the portfolio and possibly purchasing futures and options contracts in an attempt to insure their positions against adverse movements in the currency markets. All these hedging strategies bring added costs to the managers of foreign currency reserve portfolios that accumulate in dollars from oil exports.

Gold, a truly scarce commodity, functions as a constant when measured in terms of purchasing power. The dollar, separated as it is now from gold, has had its purchasing power eroded. In contrast to gold, dollars are not rare or in short supply. We increase the supply of dollars every time the U.S. Treasury issues debt, and there is no set limit anymore on how much debt the Treasury can issue. Gold reserves no longer cap the dollar supply the Treasury can issue. By law, we have a debt ceiling; however, Congress continues to raise the debt ceiling every time we hit it.

In recent years the buying power of the dollar has decreased 40 percent on the average against all major foreign currencies. Is it any wonder that real commodities (such as housing, copper, steel—all tangible assets) have exploded in price relative to dollars? Oil is no different and has increased accordingly. No wonder foreign exporters of oil have grown increasingly anxious about the future of the dollars they currently hold.

THE MOVE TO SETTLE OIL TRANSACTIONS IN EUROS

In 2003–4, while the price of oil was increasing dramatically in terms of the dollar, the price increase of oil in euros was much less dramatic. Since November 2003 oil prices in dollars have been increasing dramatically; oil prices in euros did not begin to increase until February 2004. By May 2004, oil prices in dollars had increased by 54 percent while oil prices in euros had increased only 31 percent.²⁵

In 2004 the Switzerland-based Bank for International Settlement, often called the world's central bank, reported that U.S. dollar-denominated deposits of OPEC countries fell from 75 percent of their

total deposits in the third quarter of 2001 to 61.5 percent by the end of 2003. In the same period, the share of euro-denominated deposits of OPEC countries rose from 12 percent to 20 percent. In December 2004 the *Washington Times* reported, "At the end of June 2004, OPEC members Euro denominated deposits reached 44 billion Euro nearly doubled compared to 23.5 billion Euro held in the third quarter of 2001. By comparison, OPEC dollar denominated deposits stood at \$132.1 billion, down from \$145.3 billion in the third quarter of 2001."²⁶

In part, the move to hold more euros represents a decision by OPEC countries to diversify their foreign currency holdings, reducing the proportion of dollars. Since different currencies are not expected to vary in the same direction, gains might be realized in the euro portion of a foreign currency portfolio when the euro goes up in value if, at the same time, the dollar goes down in value. Also, ironically, when a currency is strong, the foreign currency managers might shy away from holding more dollars if they are worried that if the dollar is high now, it will fall in value soon. Too great a shift out of dollars by foreign currency managers could precipitate the dollar's falling in a crisis manner, making it even more difficult for the U.S. Treasury to continue financing U.S. debt with the sale of Treasury bonds.

In 2000 Saddam Hussein convinced the United Nations to allow him to sell Iraqi oil for euros instead of dollars. Saddam even received permission from the U.N. to convert the \$10 billion oil-for-food reserve fund from dollars to euros. The idea of switching to the euro for oil settlements is not new; variations of the idea have been circulated since at least 1973, when the Arab oil embargo was under way. Then the idea was floated to move toward settling oil in a basket of some sixteen different currencies in order to weaken the hold of the dollar on the international oil market.²⁷

Saddam Hussein profited from the strength of the euro vis-à-vis the dollar, though he would have begun to suffer if he had been able to continue the policy into 2004 and 2005, when the dollar began to strengthen against the euro. Saddam might have responded that since the dollar floats in value, there would be times when the dollar is up, but still the

long-term trend of the dollar is down. From time to time government officials in Iran and Russian have made statements suggesting a switch toward the euro and away from the dollar as the denomination in which they want to settle their international oil transactions.²⁸ Moving to the euro to hurt the United States only makes sense if the euro remains strong. We have repeatedly pointed out that politically motivated moves in the current world oil market are only justified if the moves also make economic sense. Moving oil transactions to euro settlement at a time when the euro is about to weaken in value would ultimately be self-defeating. The real damage might ultimately be done to the exporter now holding lower-valued euros.

Hedging oil foreign currency portfolios by reducing the percentage of dollar holdings probably makes sense as the world market evolves. Currently about two-thirds of the world's foreign exchange reserves from oil sales are held in dollars. Some slippage in that percentage would probably not affect the U.S. Treasury's ability to sell Treasury bills in the volume needed to continue financing the U.S. debt. That picture could change if the percentage of the world's foreign exchange reserves from oil sales drops to 50 percent or less held in dollars.

Did President George W. Bush decide to attack Iraq because Saddam Hussein was threatening to move away from the dollar? Probably not. Did Bush decide to attack because Hussein was encouraging OPEC and Russia to follow his lead and move to the euro? Again, probably not. Yet the United States could not afford to ignore the threat. Saddam's move was clearly aimed at harming the United States. Still, the amount of oil we were importing in 2003 from Iraq was relatively small. Nor did it make sense to calculate that the euro would forever remain relatively strong. OPEC and Russia were not following Saddam's lead. In 2003 there was no mass conversion of foreign exchange portfolios from dollars to euros. Still, OPEC and Russia took note. Other Muslim countries did not follow Saddam's lead; he remained alone in his move to settle oil transactions in euros.

If Bush was trying to protect the dollar, all he needed to do was wait, not attack Iraq. At the end of 2004 the inability of the European coun-

tries to ratify the European Union's constitution was clear. The continuing validity of the European Union itself was being called into question as a result of the votes being registered against the constitution in Europe. War against Iraq was never Bush's only option. Had he merely decided to express confidence in the dollar, instead of invading, he would have pleased America's political Left. Ultimately, the market itself would have punished Saddam for moving toward euros. Granted, in 2003 the EU political problem over ratifying a European constitution was not foreseen. Still, even in 2003, when the euro was strong, the idea that the euro would only continue to strengthen was foolish. In a free-floating system, the values of all currencies fluctuate. A strong euro today may not be a strong euro tomorrow. The same is true for the dollar.

The dollar is strong today in large part because of the continued strength of the U.S. economy. The U.S. economy is certainly larger and more resilient than the combined economies of the EU countries. The movement we are seeing in international foreign exchange portfolios is to hedge portfolios by marginally reducing dollar positions, not to fundamentally change portfolios by dumping major dollar holdings. Continuing disagreements over the European Union's proposed constitution raises serious international concern that the EU may never become the political or economic powerhouse once envisioned. Still, all this could change. When Saudi Arabia's King Fahd died in July 2005, rumors circulated worldwide that Saudi Arabia had begun to move its foreign-currency holdings away from the dollar and into the euro. Even though the world expected no change in Saudi Arabia's oil policy, the uncertainty over the transition caused the price of gold to jump, a market movement that gained impetus from the rumors that the Saudis were moving toward the euro.

We ourselves are concerned that the long-term trend of the dollar is down. A dollar not backed by gold runs the risk that oil will continue to be expensive for Americans and that those foreign nations who sell us oil will have increasing reserves of dollars that they hold nervously. An oil-currency war launched against the dollar remains a theoretical possibility. In reality, the nations participating in such an attack would have to

be careful not to damage themselves in the process. If countries holding dollar reserves decide to diversify their holdings away from the dollar, the U.S. Treasury will have to respond quickly. What is at risk is our continuing ability to finance our growing national debt by selling Treasury bonds at affordable rates. If confidence in the U.S. dollar begins to fade, we will face a crisis that will demand serious retrenchment in our economy at home.

Our international trade partners are already making serious efforts to hedge their foreign-currency portfolios against the dollar, seeking to minimize their risk by holding fewer petrodollars. Over time, the U.S. position may erode to the point where hedging against the dollar takes up increasing proportions of the foreign-currency portfolios of our trading partners. Then what is a small impact today could well become a serious problem tomorrow. What if foreign-exchange portfolios from oil sales drop to 60 percent being held in dollars—would that cause a crisis in the U.S. economy? Or would it take 55 percent? All we know today is that hedging against the dollar already makes sense to foreign-exchange portfolio managers. We should expect even more hedging against the dollar to occur if the long-term trend to a weakening dollar persists.

This discussion points in one major direction: producers of foreign oil are exploring other areas in which to hold their money, something other than classic dollar deposits that have been proven to devalue over time. This is a trend we are not likely to reverse as long as we keep printing dollars freely while increasing our levels of debt without limit.

The supply of dollars cannot continue to grow at an unrestrained pace without adverse international effects. The exporting oil countries are clearly thinking about this issue actively. All of us would be thinking about it if we were oil exporting countries. All we would have to figure out is that the large dollar holdings we have accepted as value for the delivery of our oil aren't worth what we thought they were worth.

When a hard commodity like oil is sold for a commodity of decreasing value, namely dollars, the buyer takes serious risks. Let's say oil sells for \$50 a barrel, but then the dollar depreciates by 20 percent while you are still holding the dollars from the sale in your reserves. It turns out

you sold the barrel of oil not for \$50 a barrel but for \$40 (a 20 percent depreciation). If the dollar devaluates by 40 percent, you effectively sold the oil for \$30 a barrel.

This is the problem we discussed earlier. Oil is a hard, tangible commodity sold for dollars that are an intangible commodity with no fixed values. Since dollars can no longer be exchanged for gold, no hard, fixed commodity stands behind U.S. international payments, including oil purchases. Unless the dollar remains strong, we run a constant risk that foreign nations holding dollar-currency reserves could get nervous and move out of the dollar. When we depend upon foreign nations to buy our currency bonds, we again are in a form of dependency, a financial stranglehold. If we have to raise the price of U.S. Treasuries in order to sell them on international institutional markets, we may price ourselves beyond the ability to finance our staggering national debt at reasonable levels. This is a time bomb waiting to harm the U.S. economy when we can least afford the damage. In other words, the problem of a weakening dollar will be compounded by the problem of more expensive financing of the national debt.

The trend since 1913, when we formed the Federal Reserve, has been a continued increase of the federal debt and a continued long-term devaluation of the dollar. Unless steps are taken to reestablish some gold backing for the U.S. dollar used in international trade, we see nothing in place to get us out of this financial stranglehold.

MUSLIM NATIONS CONSIDER THE GOLD DINAR

Former Malaysian prime minister Mahathir Mohamad has championed a move for the Muslim nations of the world to reinstate the gold dinar for use as a currency of international trade. "The value of one gold dinar is one gold dinar no matter what the exchange rate of a currency is against the gold dinar. If the value of goods or services is expressed in gold dinar, the value remains the same no matter which country is involved in the trade," explains Mohamad correctly.²⁹ The gold dinar was used as currency throughout the Muslim world prior to the collapse of the Ottoman

caliphate in 1924. Prime Minister Mohamad has pressed for the reintroduction of the gold dinar since the Asian financial crisis of 1997–98, which he blames largely upon currency speculators who benefited themselves by betting against various Asian countries, including those of Malaysia and Indonesia, both countries with strong Muslim populations.³⁰

But his idea is not to reinstitute the gold dinar as the common currency for day-to-day transactions. Rather, the gold dinar would exist as an international currency to settle international transactions. The goal would be to denominate international trade in dinars. By fixing the dinar as a standard unit of weight in gold, exporters would be paid in their respective national currency by their central bank on the due date of exports based on the dinar exchange rate at the time of the transaction. Thus bilateral international imports and exports within the Muslim world would be standardized by settlements made only in reference to the value in gold dinars. As a result, the Muslim nations would reestablish the gold standard at a time when we have abandoned the gold standard.³¹

Gold dinars would not have to exist in physical form. An electronic dinar would be sufficient. Central banks involved in the program would settle differences in bilateral trade every three months by transferring gold between their custodian accounts at an international bank such as the Bank of England. The gold would not physically have to move from one country to another, but the beneficial ownership of the gold in the selected international bank would be reassigned according to the adjustments made every three months to settle the international trade accounts in dinars between participating nations.³²

The idea of the Islamic gold dinar is traceable to Professor Ibrahim Fadillo, the founder of the Morabeteen International Organization in 1983 in South Africa. The organization believes that unity in the Muslim world must be achieved through economic unity. If the gold dinar becomes the standard of international trade throughout the Islamic world, much progress would be made toward this goal.³³ This is no longer a theoretical discussion; the gold dinar currently exists. In November 2002 the gold dinar was reissued by the West Malaysian Royal Mint and is available now in physical form throughout the Middle East. The gold

dinar is equivalent to 4.3 grams at .916 fineness (22 carat), or 4.22 grams of "four-nines" gold (0.14 troy ounces), virtually pure gold. In 2003 the gold dinar began to be privately used in twenty-two Islamic countries and is minted in four countries.

Use of gold dinars in this manner could represent a strong challenge to the dollar simply because the gold backing of the dinar reestablishes in international trade the central role of gold as a fixed value, challenging all market-floating currencies, which by their very nature cannot have a fixed value. The United States should consider reestablishing some gold backing to the dollar used in settling international payments. The Islamic oil-producing world sees the wisdom in having a gold-backed currency, one that can be used for settling international payments, a direct challenge to the free-floating U.S. dollar.

In January 2004, at an economic conference in Saudi Arabia's Red Sea city of Jeddah, Prime Minister Mohamad advised the Islamic world to sell oil for gold, not dollars, to avoid being "short-changed" by a decline in the U.S. economy: "The price of oil is \$33, but the U.S. dollar has declined by 40 percent against the euro, so you're effectively getting \$20. You're being short-changed." He suggested that the Islamic oil-producing nations should tally their annual imports and exports, settling the difference at the end of the year in gold dinars.³⁴ The wisdom of Mohamad's advice was to hedge the bet against the dropping dollar. What happens if the oil-producing nations in the Middle East move toward the gold dinar as the basis for settling international gold sales? How then does the U.S. Treasury finance the ever-growing growing U.S. debt? This is not an abstract economics lesson. The point here could well be felt by every American in very painful terms that could dramatically affect the U.S. economy.

The system proposed by Mohamad could well become the standard for dealing with Muslim countries. Some fifty-six countries, members of the Organization of the Islamic Conference (www.oic-oci.org), including Iran, have indicated an interest in exploring the idea with the intent to establish the gold dinar as the standard of international trade for all goods and services moving between Iran and Malaysia. The ultimate goal is to establish the gold dinar as the alternative to the dollar in all international

trade engaged in by Muslim countries throughout the world. This would mean that the U.S. Treasury market would be competing with a gold-backed currency. In other words, we would have to use U.S. dollars to buy gold dinars to settle our oil purchases. A weakening dollar at the time of such gold purchases would make the oil we purchased from the Middle East even more expensive.

At present the United States is losing ground in the world's oil markets. Continuing to depend on the Middle East for our foreign oil supplies is a risky policy. The strategy becomes even shakier when the Muslim world begins to take serious steps to back with gold their international-exchange currencies while we do not. The United States will remain vulnerable as long as no gold stands behind the dollar. We should never forget that we are in a continuing war against radical Islamic terrorism, and that war has serious economic dimensions.

9

HOW HIGH THE PRICE OF OIL?

A billion here, a billion there, and pretty soon you're talking about real money.

—U.S. Senator Everett Dirksen

WILL WE SEE GAS costing five dollars or even ten dollars a gallon? Very possibly we will. The configuration of the world's petroleum supply and demand is shifting right before our eyes.

U.S. dependency on foreign oil has pushed us into alliances with countries whose interests are not necessarily our own. We have accepted a flood of immigrants from Mexico, taking virtually no steps to reverse the tide or return the illegal immigrants, even though we know terrorists are also slipping across the border by mixing in with the rising tide surging north. We have tolerated the leftist Hugo Chavez regime in Venezuela so we can buy oil, knowing full well that the petrodollars shipped to Caracas will be used to fund socialist revolutionary activity and narco-trafficking in Central and South America. We rely heavily on oil shipped from the Middle East while we fight a war against radical Islamic terrorism that has deep roots within one of our longer-term, more stable oil partners, namely Saudi Arabia.

Meanwhile, anti-American oil alliances are forming, orchestrated by the rogue state of Iran. Europe is scrambling to find a reliable oil supply at affordable prices, and that price advantage is being secured by the willingness of Europeans to form anti-American alliances with oil-producing nations. China and India are also searching to lock up the oil they will need to meet the demands of their exploding populations and rapidly developing economies. Against this background, Russia continues to calculate the advantages that can be won through oil alliances. We should never assume that Russia has quietly accepted that the cold war has been permanently lost.

These are the scenarios that make gas at five or ten dollars a gallon a reasonable possibility, one that we cannot afford to ignore. We return to the mathematical principle that a difference in scale is a difference in phenomenon. We have already pointed out that the world oil market has doubled in size since the early 1970s. As a consequence, the market has become more complex, not simply larger. The oil alliances that are forming now may well shape the structure of international politics and economics for decades to come. We cannot assume that the international structure that emerges will be necessarily favorable to the United States.

We may well see the development of a two-tier pricing structure in the oil market. A lower price structure could be available from oil suppliers such as Iran to such nations as China, India, and the European nations that are willing to invest in the development of Iran's oil infrastructure and struggling economy. If the United States is shut out from such favorable pricing through the formation of anti-American alliances emanating from Iran, we may find ourselves scrambling on the spot markets to find foreign oil at less-than-favorable prices.

IRAN HAS OIL AND WANTS NUKES

In 2005 the world has a clear opportunity to see just how important Iranian oil is to Europe. We also saw the lengths to which Europeans were willing to go to preserve for themselves favorable access to Iranian oil. Understanding how this plays out will require a look at the negotiations re-

garding Iran's nuclear-weapons program that took place in the critical months after the 2004 U.S. presidential election.

The clerics ruling Iran have pursued a secret nuclear-weapons program for more than two decades. In November 2004 the mullahs agreed to suspend the enrichment of uranium as part of an agreement with France, Germany, and Great Britain (known as the EU-3) to further negotiate the development of Iran's nuclear industries. Iran has long claimed that its only purpose in pursuing nuclear power is to generate electricity, not bombs. Prior to the 2004 presidential election, the United States, had been moving toward a confrontation with Iran. Vice President Dick Cheney had even suggested that Israel might launch a preemptive strike against Iran, one that the United States could well see as within Israel's legitimate rights of self-defense.¹ Then, after the election was over, a newly reelected President Bush traveled to Europe, having first sent his new secretary of state, Condoleezza Rice, to prepare the way.

As a result of discussions in Europe, the Bush administration changed the course of its Iran policy. A decision was reached to support the EU-3 negotiations to see if Iran might be persuaded to drop its nuclear-weapons program in a clear and verifiable manner. The United States agreed not to take military action until the outcome of these negotiations was final. There were some conditions placed as this new direction was being set. The United States insisted that Iran would abandon all efforts to enrich uranium. Given the history of Iran's clandestine weapons program, the Bush administration believed the word of the mullahs could not be trusted. Thus the Iranian plant at Isfahan, which was used to process yellowcake uranium to uranium hexafluoride gas, would have to remain closed. Iran would also have to agree to keep closed its uranium-enrichment facility at Natanz. Here the mullahs have built a huge underground facility housing thousands of sophisticated centrifuges that are used to process uranium hexafluoride gas into weapons-grade uranium 235. The EU-3 agreed that this bright-line distinction would be a negotiating point. The Iranian heavy water plant at Arak would also have to be closed. The facility at Arak would give the Iranians the ability to produce weapons-grade plutonium.

In return for allowing the EU-3 time to work out a deal with Iran, the Europeans agreed that the Iranian question would go to the U.N. Security Council for the imposition of further sanctions should Iran refuse to negotiate an agreement the Europeans and the Americans would accept. Why did the Bush administration back off its hard-line position after the 2004 election victory? Second terms for U.S. presidents have proven difficult since the ratification of the Twenty-Second Amendment to the Constitution. Presidents reelected to second terms are by definition "lame ducks" who cannot seek reelection. Politicians who cannot run for reelection have difficulty holding together their own political party, let alone setting the agenda for the opposition party. Second terms proved disastrous for Richard M. Nixon, who was forced to resign under the shadow of Watergate, for Ronald Reagan, who was severely limited by the Iran-Contra scandal, and for Bill Clinton, who was impeached for perjury, having lied under oath regarding his sexual activity with White House intern Monica Lewinsky.

During the election campaign, Bush had been strongly attacked over the failure to find stockpiles of weapons of mass destruction in Iraq after the United States had invaded and deposed Saddam Hussein. The controversy over the failure of U.S. intelligence before the Iraq War could easily have cost him reelection. After the 2004 election, the administration faced the same difficulty with regard to Iran. Now even the International Atomic Energy Agency (IAEA) of the United Nations openly admits that Iran has been deceitful about its nuclear research and development program.² Still, no one had incontrovertible evidence that Iran actually had an atomic bomb. Thus, invading Iran at this point would amount to launching another preemptive war. In a lame-duck second term, Bush would run the risk of impeachment should he go to war unilaterally against Iran to prevent that country from developing a nuclear weapon. By playing out the EU-3 negotiations, the administration might get the desired result. If not, the Europeans have agreed to join the United States in bringing the issue before the United Nations.

No one had any illusions that the Security Council would take strong steps against Iran. China and Russia are both permanent members of the

Security Council. Russia had just completed building Iran's first nuclear reactor at Bushehr, on the Persian Gulf. China was in the midst of negotiating rights to develop Iranian oil fields with the intent of using the oil in China. Both countries would be expected to support the mullahs. Still, advancing the case through the United Nations with the support of the Europeans was a way for the Bush administration to lay the case on the table, not only to the world, but more importantly to American voters.

The Europeans made a series of very generous offers to get the mullahs to agree not to enrich uranium. Many of the proposals directly involved oil. They offered to make Iran the main transit route for oil and natural gas moving from Central Asia. This would allow crude oil and natural gas to move from the huge reserves in Kazakhstan to world markets without having to move this oil through the American-supported rival pipeline through Turkey.³ The proposed route across Iran would move oil into Europe quicker than the traditional pipeline route via the Caspian Pipeline Consortium to a terminal near the Black Sea port of Novorossiik. The EU-3 proposed to the mullahs that Iran would be positioned in the coming decades to be the main oil and natural gas supplier to Europe. By also making sure all pipeline routes crossed through Iran before the oil moved out of Central Asia, the Europeans were making sure that Iran had a strategic hold on a huge quantity of Middle Eastern oil. They would be positioned to derive revenue whether Iran produced the oil and gas supplying Europe or merely served as the geographical conduit for the passage of the oil to Europe from other suppliers.

The EU-3 proposals also contained guarantees of sovereignty, promising that Iran would not be invaded by other nations, including the United States. These assurances were designed to resemble the types of assurances John F. Kennedy's administration gave the Soviet Union to end the Cuban missile crisis, when the United States gave its word that it would not invade Cuba to depose Fidel Castro.

A bundle of additional economic incentives were packaged together by the EU-3, including substantial commitments to help the mullahs develop their extensive oil and natural gas resources. Since the 1979 revolution, much of Iran's oil industry infrastructure has fallen into disrepair and

become obsolete. By propping up Iran's oil industry, the Europeans would give the mullahs the revenue to maintain their personal lavish lifestyles and to keep their subsistence economy above the point where the oppressed people of Iran might rise up en masse to demand regime change and reform. The EU-3 even offered to supply Iran the enriched uranium needed to operate peaceful nuclear power plants, provided the Iranians promised not to develop their own uranium enrichment capabilities.

All these proposals missed the mullahs' main point. As a signatory to the Nuclear Nonproliferation Treaty (NPT), Iran insisted it had the right to develop the "full fuel cycle." This language contained code words for Iran's insistence it had the right to enrich uranium and to develop weapons-grade uranium as long as no atomic bomb was actually produced. Although the original intent of the NPT was to prevent additional nations from pursuing nuclear weapons, the mullahs had turned the treaty's intent upside-down, claiming the NPT justified their pursuit of the full fuel cycle as long as they stopped "a turn of the screw away" from actually developing a bomb. This is why the United States demanded that Iran take clear and verifiable steps to dismantle their existing uranium-enrichment facilities. Anything less would give the mullahs all the room they needed to continue cheating, producing nuclear weapons clandestinely, while insisting publicly that their intents were peaceful and that they had stopped just short of actually producing a bomb.

The mullahs knew that the world would come to them for oil whether or not they agreed to the conditions of the EU-3. What the mullahs saw was that a nuclear-armed Iran, or one that could become nuclear armed in a short time, was the strategic advantage they were seeking. With nuclear-weapons capability, the mullahs would buy themselves a "stay in power" form of insurance they could get no other way. Dislodging by military force an Iranian regime armed with nuclear weapons would be a major feat far more difficult and dangerous than the Iraq War. If the mullahs could put a nuclear-weapons umbrella over their support for terrorist organizations such as Hezbollah, which they created and funded in Lebanon, then their desire to spread the Islamic revolution worldwide would take great leaps forward. Moreover, armed with nuclear weapons,

the Iranian government could take a central place on the world stage, demanding more-advanced nations listen to the mullahs' demands or face a form of nuclear extortion that could easily be aimed at stopping or impairing the world's needed flow of oil.

The reasons the EU-3 were determined to prolong negotiations with Iran, desperate to scramble for any solution that would be acceptable by both Tehran and Washington, can be more easily understood when we appreciate the extent to which EU-3 oil companies are already active in Iran. Some 31 French companies are currently developing the oil industry in Iran. The list also includes 80 German companies, plus an additional 48 from the United Kingdom. Clearly, each of the EU-3 countries already have substantial economic involvement in Iran's oil economy. The Eleventh International Oil, Gas, Petrochemicals Exhibition (IOGPE) is scheduled for Tehran on April 20–23, 2006. A list of 442 international companies in the oil and natural gas industries are already listed on the IOGPE as exhibitors and participants. In addition to companies from the EU-3, the list also includes participants from Australia, Austria, Belgium, China, Denmark, India, Italy, Japan, Kuwait, Malaysia, Monaco, the Netherlands, Norway, Poland, Russia, Saudi Arabia, Singapore, South Korea, Spain, Switzerland, Turkey, and the United Arab Emirates. About the only major nation not involved is the United States, and that is only because of U.S. sanctions currently in place against Iran.⁴

The minute Iran moves to enrich uranium, the price of oil will spike. Should the world become convinced that the only way to stop Iran from enriching uranium is to take military action, the price of oil might not only spike, it might settle in at a new, higher plateau. The world oil markets are extremely sensitive to political or economic instability. While Iran might claim its intents are entirely peaceful and that the mullahs would stop short of making nuclear bombs, the world oil markets can be expected to price themselves as if the mullahs are lying. If Iran begins enriching uranium, the country will reach a point of no return very soon. The point of no return is defined as the moment Iran has everything necessary to make an atomic weapon, the point where Iran's nuclear-weapons industry is so advanced that not even a military attack would be able to

take out the country's ability to make a bomb. Reports continue to surface that Iran already has a bomb or that it has purchased on the black market all the components needed to make a bomb, including enriched uranium.

Gasoline in the United States at five dollars or ten dollars a gallon becomes very likely as soon as the world oil market determines that international diplomatic efforts to stop Iran's progress toward the bomb have failed. A war with Iran, should it occur, would boost prices even higher.

CHINA EMERGES EVERYWHERE IN WORLD OIL MARKETS

In July 2005 China's foreign-currency reserves hit a record high of \$711 billion, boosted largely by the lopsided favorable balance of trade that China enjoys with the United States.⁵ This huge war chest has prompted the Chinese to look worldwide for oil and natural gas deals. One of the most controversial was the bid by the China National Offshore Oil Corporation (CNOOC), China's third-largest government-controlled oil company, to purchase the California-based Unocal for \$18.4 billion. The bid drew intense political criticism from U.S. critics who believed the deal might severely compromise U.S. national security interests. The acquisition would have gained for the Chinese not only a U.S.-based oil company but substantial reserves. Even though Unocal is considered a third-tier or midsized U.S. oil company, it still commanded oil reserves estimated at 211 million barrels.⁶ Valued at \$50 a barrel, the value of Unocal's reserves alone could exceed \$10.5 billion; at \$60 a barrel, \$12.6 billion.

Those who believed the merger should proceed argued that market forces would be determinant of the ultimate wisdom of the purchase. If the Chinese used Unocal to capture oil reserves that could be sent at below-market prices back to China, they might undermine the value of their investment in Unocal. As an investor, China should be motivated to maximize Unocal's profits, not just secure for China cheap oil. Opponents argued that the United States should not allow foreign nations to buy U.S. oil companies that held such substantial reserves. Given our dependence on foreign oil, we could face a national security problem if China decided to ship the Unocal oil to China, even if doing so meant taking a market

loss for Unocal. Critics believed we should not empower any foreign nation with the ability to deal that kind of blow to the U.S. economy. On August 2, 2005, CNOOC withdrew its bid for Unocal, giving in to the intense adverse U.S. political pressure the proposal had generated. The withdrawal of the bid allowed ChevronTexaco to acquire Unocal for a lower bid of \$17.6 billion. On a purely economic basis, those in the United States who had supported the CNOOC acquisition noted that the political fallout had been costly to the shareholders of Unocal.

China's consumption of petroleum exceeded 6.84 million barrels a day in 2004, placing it third in the world after the United States and Japan. China currently has six nuclear power plants in operation, with a generation capacity of 8.8 million kilowatts, accounting for 1 percent of the country's total power output. The Chinese government is planning to increase nuclear power generation to 20 million kilowatts by 2010, expanding to the point where nuclear power can account for 5 percent of China's total power output by 2020.⁷ Also, China is making major efforts to shift from using coal as its major industrial energy source to using oil and natural gas. Before the opening of the Beijing Summer Olympics in 2008, China wants to reduce substantially the amount of urban air pollution caused by burning coal. To fuel an economy whose GDP grew at a staggering rate of 9.1 percent in 2003 and 9.5 percent in 2004, the Chinese government has launched a worldwide search for oil.

China is able to offer international partners a comprehensive deal. Nothing illustrates this better than the visits China's President Hu Jintao made to South America at the end of 2004,⁸ including Argentina, Brazil, Chile, and Venezuela. Given China's tremendous need to import a variety of goods, from Brazilian chicken and beef to Argentinean soybeans to Chilean cooper, Hu Jintao could offer each country appropriate exporting opportunities of mutual benefit. Moreover, the Chinese were willing to make infrastructure deals with countries willing to be trade partners, looking to develop roads, telecommunications, and seaports. In Venezuela, President Hugo Chavez offered to put at China's disposal the development of many of its oil facilities. Chinese firms will be allowed to develop fifteen mature fields in eastern Venezuela, which together are capable of yielding

more than 1 billion barrels of oil. Chavez offered to give China a favored position in the bidding for natural gas exploration contracts in the western part of the country that Venezuela is planning to offer for bid in 2006. In return, China offered to invest heavily in the development of Venezuela's agriculture, railways, mining, and telecommunications. China and Venezuela discussed plans to build a pipeline across Colombia, or possibly through Panama, to facilitate an easier passage to move Venezuela's oil and natural gas to the Pacific Ocean for export to China.

Hu Jintao ended his swing through the southern Western Hemisphere by visiting Fidel Castro. He promised that China would invest in Cuba's nickel mines with the goal of doubling the shipments of nickel from Cuba to China. The Havana visit communicated to South America that China was an open political alternative to the United States, one willing to invest in its development without objecting to its leftist politics. The approach was similar to the type of deals the Chinese were willing to make with the radical terror-supporting Islamic mullahs in Iran. Lest anyone miss the point, China was clear to communicate that an enemy of the United States could find a friend in China, one with plenty of dollars in foreign currency that the Chinese were willing to invest for the benefit of their friends. These overtures were well received, especially as the Chinese emphasized the contrast to what all too often is perceived as decades of economic neglect and second-class status suffered at the hands of the United States, South America's self-satisfied and self-focused neighbor to the north. China has now acquired oil exploration and production rights in Azerbaijan, Canada, Indonesia, Iran, Iraq, Kazakhstan, Sudan, and Venezuela.⁹

In 1998 the Chinese government reorganized the state-owned oil and natural gas operations into two vertically integrated firms: the China National Petroleum Corporation (CNPC) and the China Petrochemical Corporation (Sinopec). These two megastructures sit alongside the China National Offshore Oil Corporation (CNOOC), the entity that tried to purchase Unocal, the structure in China charged with the primary responsibility for offshore oil and natural gas exploration and production. Between 2000 and 2002 all three entities—CNPC, Sinopec, and CNOOC—successfully carried out initial public offerings (IPOs) on foreign stock

markets, an initiative that brought in billions of dollars of foreign capital to develop China's oil and natural gas industries. PetroChina, a subsidiary of CNPC, sold a minority interest on both the Hong Kong and New York stock exchanges in April 2000. The IPO brought in \$3 billion, with BP, the largest purchaser, acquiring 20 percent of the shares offered. Then, in October 2000, Sinopec raised \$3.5 billion by offering a minority stake of 15 percent on the Hong Kong and New York stock exchanges. About \$2 billion of this was purchased by ExxonMobil, BP, and Shell.¹⁰

China obviously can afford to purchase top worldwide investment banking expertise. What is also obvious is that the world's major oil conglomerates in both Britain and the United States are more than willing to invest substantial amounts in the development of what promises to be ultimately the world's largest market for oil and natural gas consumption. In none of these foreign investments did the U.S. government or the government of China raise any national security concerns. The dynamics of the world oil marketplace were in full swing here as the opportunity for economic gain looked across borders, inviting the willing participation of major oil conglomerates whose interests were for their stockholders, not the specific national interests of the countries where they are headquartered. If China rises economically and politically to the detriment of the United States, oil conglomerates based in the United States will have assisted it substantially.

China has for decades been considered oil-poor. This classification, however, has been no detriment to the Chinese. Within the past five years, major oil and natural gas discoveries have been made in China. After twenty years of exploration, Sinopec has announced that it has discovered large amounts of oil and natural gas in the country's northwest Tarim Basin. This one find added some 8 billion barrels of oil to proven reserves, which before the find had been estimated at no more than 23.5 billion barrels for all of China.¹¹ So far, fifteen oil fields and fourteen natural gas fields have been found in the Tarim Basin.¹² Exploration there is continuing while new exploration efforts are being planned across China. The experience in China seems to be repeating the experience in countries such as Iran, Kazakhstan, and Russia—geological estimates

were wrong. All the oil had not been found. Previous estimates are giving way to higher estimates as new resources are being found.

China appears to be following a policy of investing in oil and natural gas exploration and development in order to secure for itself virtually exclusive production rights for the oil and natural gas that is produced as a result. The calculation seems to be that the investment required to acquire and develop these rights, either domestically or in foreign countries, will be economically sound if future production is thereby insured today at prices lower than market prices would have demanded in the future. Thus, oil secured by China through this invest-and-own methodology may never enter the world marketplace except to the extent that its availability keeps China off world markets in search of future imports where no rights have been secured. We could see, as a result, the development of a two-tier marketplace where China has oil it owns coming in at cheaper prices, and countries like the United States must still go to the world market to buy the oil they need at then current prices.

As China continues to buy up oil and natural gas reserves worldwide, we should expect continued pressure on the price of oil. The marketplace can be expected to price oil higher today, anticipating that China's buying more oil rights for itself today will mean less oil will be available to others—including the United States—tomorrow. No matter how much oil China acquires in foreign countries or discovers at home, there is no reason to expect that China will become a net exporter of oil. China's historical perspective has always been long-term, which contrasts sharply with U.S.-based companies that can rarely see beyond quarterly profit objectives. China is patient enough to expect that the size of its population and the strength of its economy will ultimately overtake all others, even if reaching that objective takes another hundred years.

RUSSIA PLAYS BOTH SIDES AGAINST THE MIDDLE

In 2004 Russia's GDP grew by 7.1 percent, easily beating the growth rates of all other G8 countries. This expansion was driven largely by increased oil prices worldwide. The U.S. Department of Energy estimates that a \$1

boost in the price of oil increases Russian revenue by \$1.4 billion.¹³ The impact of oil prices on the Russian economy is huge; Russia's oil-and-gas sector account for more than 25 percent of the country's GDP. When oil prices were bottoming out at around \$10 a barrel in 1998 (something we find hard to remember when oil hits new highs over \$70 a barrel in August 2005), the Russian economy suffered. The spike in oil prices since the 2003 invasion of Iraq has breathed new life into the Russian economy.

China and Russia are working now to develop the most efficient rail or pipeline routes to bring oil out of Russia and into China. Other transportation routes are being examined to bring Russian oil to ports where it can be shipped via the Barents Sea to the United States or via the Baltic Sea to Europe. Other pipeline projects would carry oil from Russia into Europe through Poland or south into Turkey. The point is that Russia intends to expand its ability to get oil and natural gas into world markets from its extensive oil fields in Siberia. The U.S. Department of Energy estimates that Russia has 60 billion barrels of proven oil reserves. Oil production has increased to 8.8 million barrels a day, of which 70 percent is exported to foreign markets. As we noted earlier, experts considered Russia to be oil-poor decades ago. Today Russia rivals Saudi Arabia as the world's largest oil exporter.

The United States would like to think that Russia lost the cold war when the Berlin Wall fell and the Soviet Union broke apart. We should never forget that Russia continues to have strong national interests, whether they are communist or not. In many instances, Russia pursues goals that are at odds with U.S. national interests. As we have pointed out, Russia has built a nuclear reactor for Iran, even though the United States continues to impose sanctions on Iran. We are very concerned that an atomic Iran will destabilize the Middle East, giving reason for Turkey and Saudi Arabia to consider whether they, too, need to pursue nuclear weapons, if only for their national defense. Russia has moved to center stage, offering needed economic assistance to Iran at a time when the United States continues to charge that Iran supports terrorism worldwide. These interests could not be more at odds. In August 2005 Russia and China staged joint military exercises. At various points in the cold

war, Russia and China were often at each other's throats. Now, the military in the two countries cooperate in military exercises, reflecting an emerging alliance in which oil is probably at the unspoken center.¹⁴

So, too, Russia has supplied missiles to Syria, another regime the United States considers supportive of terrorism and a national security risk to our ally Israel. In April 2005 Israel objected to a Russian deal to sell advanced SA-18 antiaircraft missiles to Syria. These missiles would make it more difficult for Israeli airplanes to fly over Syria. Russian President Vladimir Putin had backed off an earlier plan to sell Syria a shoulder-held version of the SA-18 because of American and Israeli pressure. Still, Israeli military experts objected that the vehicle-mounted SA-18 could easily be adapted to be shoulder-held. Israel also expressed concerns that Syria might well supply the Russian-made SA-18 missiles to insurgents in Iraq who are destabilizing efforts to establish democracy and attacking U.S. troops, or to Hezbollah operatives in Lebanon who have been supporting terrorist attacks against Israel.¹⁵

Each of these geopolitical developments affects the price of oil. World oil prices could further spike if the futures markets begin to conclude that Russian oil deals are moving to position their available supply with selected trading partners at special pricing, a move that would take huge quantities of Russian oil off the open world market. Again, we have suggested that America's dependence on foreign oil places us in a position where the formation of anti-American political alliances may have immediate repercussions on the price of oil. The moment futures markets sense that the U.S. supply of foreign oil might be restricted, the market will reprice upward to factor in that uncertainty.

U.S. OIL CONGLOMERATES CONSOLIDATE POWER AND SIT ON HUGE RESERVES

Since 2000 a wave of mergers has hit the oil and natural gas industries in the United States. The U.S. Department of Energy maintains a system called the Federal Reporting System (FRS) that tracks major U.S.-based energy companies. Following the recent mergers affecting oil and gas

producers, FRS identified a total of thirty-four companies that merged into thirteen from 1997 to 2002.¹⁶ The U.S. oil and gas industry is consolidating, with a few huge conglomerates emerging. A report by the Consumer Federation of America was quick to identify this trend with energy price increases: "The big got bigger and domestic prices started ratcheting up soon thereafter."¹⁷

Industry observers concluded that a major strategy was "to acquire reserves through mergers and acquisitions, rather than exploration."¹⁸ A look at the reserves of several of the newly emerged major oil conglomerates confirms this. Chevron and Texaco merged in 2000 in a \$35 billion transaction to form ChevronTexaco. The resulting conglomerate became the world's fourth largest in terms of oil and natural gas production. The U.S. Department of Energy estimates that ChevronTexaco owns 2.9 billion barrels of oil and national gas reserves, about 9.6 percent of the U.S. total.¹⁹ When Exxon and Mobil merged in 1998 in an \$80 billion transaction, the end result was about the same. ExxonMobil also commanded 2.9 billion barrels of oil. So between ChevronTexaco and ExxonMobil, the two companies have about 6 billion barrels of oil reserves, about 20 percent of the U.S. total.²⁰

The oil industry strategy to consolidate through mergers and capture reserves proved very profitable. The U.S. Department of Energy reported that 2003 earnings for FRS consolidated oil companies exceeded \$57 billion in 2003, nearly triple the earnings of 2002 and the highest net income (in constant dollars) since 1980. The earnings resulted almost entirely from the rising energy prices in 2003, a trend that continued throughout 2004 and into 2005. Undoubtedly, the period of spiking oil prices since the United States invaded Iraq has been one of the most profitable periods in history for the U.S. oil industry. The oil industry has largely used these increased profits to reduce debt, repurchase stock, and pay dividends to shareholders. The industry has not expanded exploration efforts or opened new refineries.

As we stressed earlier, even if U.S. oil companies decided to increase immediately the supply of oil onto the market, they would face a barrier. The bottleneck remains: oil reserves must be refined before they can be

put onto market. U.S. oil refineries are operating at or near capacity right now, and no new refineries have been built in the last thirty years, and no new refineries are scheduled to be built in the immediate future. The refinery part of the oil business has traditionally been a low-margin part of the industry, and the environmental regulations enacted over the last three decades have been compounded by the desire of most communities to keep refineries out. If tomorrow the major oil conglomerates increased dramatically the amount of crude oil put on the market, the increase in the flow of gasoline to the pumps would be negligible at best. The commitment that needs to be made is long-term.

If the oil industry made a commitment, for instance, to increase oil-refining capacity dramatically, perhaps by 10 or 15 percent, that might have an impact on pricing. Industry pricing could adjust to the greater possibility of supply. The exact impact on pricing would depend on many factors, including increase in demand that an increase in supply might stimulate. Yet in an environment of high gasoline prices, the public is looking for effective responses from oil conglomerates that are enjoying record profits. A move to expand refining capacity would demonstrate the determination of the oil industry to break the stranglehold that limited refining capacity has on the flow of more gasoline to the market in times when demand is outpacing supply. An unwillingness to add refinery capacity leaves American consumers vulnerable to continued strangleholds whenever we face dramatic increases in crude oil prices that cannot be countered by oil companies responding by increasing gasoline supplies at the pump.

Today the U.S. oil industry is sitting on a quantity of oil reserves that have never been higher. The picture that emerges is one of major oil industry conglomerates simply sitting on huge reserves and waiting for oil prices to go even higher. This is an industry profile that is certain to cause consumers to complain loudly, especially if gasoline prices continue to spike. Shareholders might like to see oil go to five dollars a gallon, but consumers may not be able to tolerate an increase of that magnitude without suffering severe economic pain. In market terms, these pressures should lower demand, which ultimately will result in

lower oil and gasoline prices. Politically, however, scenarios such as these are disastrous—both to oil companies and to politicians in office.

The oil companies would be well advised to take immediate steps to increase refinery capacity, even if most of those steps can only be expected to have longer-term market impacts. Building refineries or adding capacity to existing refineries takes time. Still, the public must be able to see that the oil companies are doing everything possible to get more oil and gas to the market when price increases continue to rise to unacceptable levels. It may be hard to determine in advance what the exact tolerance for increasing prices will be. Consumers have weathered gasoline prices as they have passed two dollars a gallon, but will the same hold true as gas prices get higher, to five dollars a gallon or ten dollars a gallon? This is a calculated risk both oil company executives and incumbent politicians must take. The problem is that many of the conditions that affect oil prices are beyond immediate control. Another series of terrorist bombings in the subways of London, or possibly New York, could be all we need to see the price of crude oil spike even higher.

The range of imaginable political scenarios capable of causing oil prices to rise is almost limitless, but the steps oil companies can and should take to avert further price increases are fairly obvious. In markets where the pressures on oil prices are higher, oil company executives would be well advised to make sure the public sees that they are using windfall profits on efforts to increase supply. Where are the new oil exploration efforts? the increased refinery capacity? These are the questions the media and the public will want answered. Yes, reducing corporate debt, repurchasing stock, and paying dividends are all responsible corporate governance, but not at the risk that the public feels gouged in the process. Reinvestment in increasing supply is mandatory for good corporate governance when increased oil prices look like they have no ceiling. Otherwise, the public may conclude that the oil conglomerates are content simply to sit on their huge reserves and wait until the price of oil rises to their liking before any of their ample supplies are released for the benefit of a demanding public.

Oil company mergers and acquisitions can arguably position the industry for greater achievements. Larger companies should be able to achieve operational efficiencies by consolidating operations. A stronger capital base should position U.S. oil conglomerates to access the world investment and banking capital markets to obtain the resources needed to remain competitive in the world marketplace. Yet consumers will have to see more than record profits, especially if energy prices continue to climb. It will not be enough for oil company executives to run for cover under newspaper and television public-relations campaigns replaying the tired theme *Are We Running Out of Oil?* Instead, the oil companies should take the lead in explaining to Americans how we can end our dependence on foreign oil. Conservation will not be the answer. Using less energy is not a solution. The theme of scaling back represents an even bigger problem to consumers who want to maintain their lifestyles in an economy that should continue to lead the world.

Oil conglomerates will have to be in the lead to show America how we can explore for more oil domestically without risking unacceptable environmental damage. Oil companies should explain to the public their plans to expand the usage of natural gas or show how they plan to be constructively involved in the development of energy alternatives, including nuclear power. If our mix of energies needs to shift, the American consumer will expect the oil conglomerates to lead the way. We need to see active involvement by oil company executives explaining to the public how they intend to transform themselves from being oil companies to being energy providers. Otherwise the picture presented to America and world is one of fat-cat oil conglomerates content to play out an end game, milking record profits down to the last drop of oil as long as the oil flows.

The U.S. economy continued to expand through 2004 and into 2005 even as the price of gasoline went over two dollars a gallon and headed toward three dollars a gallon. At some point, increased gasoline prices become an inevitable drag on economic expansion as higher fuel transportation costs impact a range of businesses from trucking companies to airlines. Industries hit by fuel-cost increases must eventually pass those

costs onto consumers. The U.S. economy works off confidence. Nobody ever knows for sure what magic number will be too high a price for gasoline before consumers feel the pinch. That price always comes in times of rising markets. Increasing energy prices may not be an immediate cause for panic, but certainly they are a long-term basis for concern. Stable energy costs create confidence, which is an essential condition for the continued growth and development of the American economy.

THE PRICE OF OIL AND THE FUTURES MARKET

Today the price of oil is largely a function of the futures market. Just as the U.S. economy works off consumer confidence, the world oil market is sensitive to any disruptions or potential disruptions that can cause uncertainty. The range of variables that can cause oil prices to increase on futures markets is almost infinite: shutdowns because of labor problems in U.S. refineries, hurricanes in the Gulf of Mexico that disrupt offshore drilling, terrorist attacks anywhere in the world, changes of government within countries, or statements by oil-producing nations that they are going to increase or decrease production. These and countless more variables affect oil prices on the world futures markets. Essentially, buyers of futures contracts are making a bet on what the price of oil will be at a specific date in the future. When those buyers feel more uncertainty, the price of futures contracts goes up. When futures prices go up, the current market for crude oil—including the world spot markets—suffers upward pressure as a result.

World oil-pricing markets tend to be spirals of cause and effect, both in upward and downward directions. With the greater political uncertainty we are experiencing today due to international terrorism, the pressure on worldwide oil markets is likely to continue in an upward direction. Unless we can break the stranglehold of U.S. dependence on foreign oil, we will have an ever-weakening hold on our own destiny. Our dependence on Middle Eastern oil has increased since the end of World War II, as many government planners at that time predicted it would. Today we are at a crisis point. Nothing in the Middle East will be stable as

long as fundamental conflicts persist, yet resolving the conflict between Israel and the Palestinians remains problematic at best. With Iran holding strong oil reserves and gaining increasing economic assistance from a wide range of countries, including China, India, Japan, and Russia, as well as Europe, we are likely to face constant challenges from the commitment of the Iranian regime to Islamic fundamentalism and the spread of their Islamic revolution.

We cannot stress enough that oil at five dollars or ten dollars a gallon is a clear and present danger, if not for today then certainly in the immediate future. As we have noted repeatedly, oil prices have been extremely volatile since the early 1970s. Yet we should not expect to see anytime soon a return to the 1998 low of ten dollars a barrel. The challenge America faces today is how to evolve a new oil independence while maintaining continued economic growth at home and fighting to secure our national security as the war against terrorism continues. Reaching out to understand the Islamic world, as critics on the Left constantly implore, are necessary steps to a peaceful future. Understanding alone, however, will not be sufficient in a world where radical Islamists are resolved to destroy America and Israel. The attack on Western economies launched by radical Islam cannot be won without economic strength. That alone necessitates our continued drive for ending our dependence on foreign oil. If we are held hostage to increasing oil costs, our economy will soon run out of the fuel we need at a price we can afford.

10

TERRORISM AND THE THREAT TO OIL

You steal our wealth and oil at paltry prices because of your international influence and military threats. This theft is indeed the biggest theft ever witnessed in the history of the world.

—OSAMA BIN LADEN,
“Letter to the American People,”
November 24, 2002

AN ECONOMIC ARGUMENT IS central to Osama bin Laden’s war against America. He believes that we have stolen the oil of the Muslim world. “Whoever has stolen our wealth, then we have the right to destroy their economy,” was a key statement in bin Laden’s November 24, 2004, letter to the American people.

Bin Laden’s statement should be taken as a thoughtful expression of a serious concern. At the core of the issue is bin Laden’s perception that America has paid for oil, a hard commodity, with paper dollars that are no longer backed as they once were by the hard commodity of gold. Bin Laden is astute to realize that America could at any time reduce even more the price we have paid for the oil by devaluing our currency. Devaluation can occur at any moment on a free exchange where the value of the dollar floats in relationship to other currencies. If the world’s currency traders lose confidence in the dollar, a resultant sell-off of dollars could easily constitute a de facto devaluation, whether the U.S. government wanted it to happen or not.

Make no mistake: America is in an economic war with radical Islamic extremists. The World Trade Center was targeted for attack on 9-11 in large part because of its importance as a symbol of American capitalism. So, too, the masterminds behind the 9-11 attack realized that a physical blow to New York City could quickly become an economic blow not only to New York City but, even more important, to the U.S. economy. Moreover, the psychological damage from the attack would be suffered by Americans across the nation, with further economic harm likely to result.

What were the consequences of 9-11? Airlines were grounded, the New York Stock Exchange was closed, even major league baseball games were cancelled. America came to a standstill as people all over the country canceled travel plans and retrenched, worried about their jobs and their safety. The Patriot Act, one of the most severe laws ever debated, was passed, and the nation prepared for war against the Taliban in Afghanistan. The economic downturn after 9-11 showed that the terrorists had calculated correctly. After more than 1 million jobs lost, several trillion dollars of equity evaporated from the stock market, and an increase of \$1.6 trillion to our national debt, no one can say 9-11 was anything short of financially devastating. Terrorist attacks upon industrial nations have serious and immediate adverse economic consequences.

Radical Islamic extremists view the economic advantages of America as having been derived in large part because we have stolen from Islamic countries the oil we need to fuel our industrial economies. Islamic extremists may easily conclude that America's final moves away from the gold standard were in response to the steps taken by OPEC during the 1973 oil embargo, even though those steps were begun by President Nixon in 1971. Still, the charge is not only that we have paid too little for the oil, but also that the dollars we have exchanged in the purchase are potentially worth less tomorrow than they are today.

TERRORISTS AND ROGUE STATES

The admonition to follow the money is fundamental to law enforcement investigations of criminals. The same holds true for terrorists. Without

money, terrorists are dead in the water. Terrorism itself is not a business, so terrorists have no sales revenue. Terrorists do not run any governments, at least not openly. So terrorists cannot finance themselves by levying taxes. And without money, terrorists can create no organizations, finance no sleeper cells, purchase no airplane tickets to travel internationally, buy no bombs to give to suicide bombers. Without money, terrorists cannot plan or recruit for future attacks. The point is simple but important: without money, terrorists can do nothing.

Where do terrorists get their funding? Terrorist organizations and their supporters engage in various forms of organized crime, including the worldwide drug trade. Radical Islamic terrorists also run fraudulent charities that are really front organizations whose primary purpose is to fund terrorist activities, not to distribute money to the needy.¹

Yet much of the support terrorists receive depends upon the active cooperation of rogue states. Frank Gaffney and the Center for Security Policy in Washington DC has launched a project called Divest Terror (www.DivestTerror.org) to investigate public and private pension plans, college endowments, individual retirement account managers, 401(k) plans, and other investment vehicles to identify investments in publicly traded companies that operate in terror-supporting states.

In a united front, we should all be saying "This is my money and it will not go to support terror." DivestTerror.org is a nationwide campaign aimed at some 400 public companies worldwide that are providing revenues, technology and moral cover to governments that sponsor terrorism.²

The goal of the campaign is to give terror-supporting governments a choice between losing important investment income or cease to give financial support and refuge to terrorists. The model of the campaign is the boycott and divestiture campaign that forced South Africa to end apartheid in the 1980s.

Radical Islamic terrorist organizations depend upon sympathetic governments to provide the money they need to send suicide bombers to attack the World Trade Center and the Pentagon, to bomb trains in Spain,

and to attack subway cars and buses in London. Iran is the leading rogue state supporter of terrorism in the world. Even Saudi Arabia, supposedly one of our major allies in the Middle East, is a culprit. Without direct funding from the Saudi Arabian government, the Wahhabi sect of Islam, one of the most virulently radical, anti-United States, anti-Israel sects of Islam, would have a hard time existing.

The economies of both Saudi Arabia and Iran are heavily dependent upon oil revenue. The thought is frightening: even though we buy no oil from Iran directly, we may ultimately be funding terrorism every time we buy gas. Ironically, radical Islamic terrorists depend upon us to keep filling our gas tanks so their cash flow can continue. So just by driving automobiles in our everyday life we may well be sending money indirectly to the terrorist enemies who have sworn our destruction.

Radical Islamic extremism is at the core of the geopolitics of many Middle Eastern governments. Wahhabism is the sect of Islam at the core of Saudi Arabian society. The Saudi Arabian government has begun to realize that appeasing Wahhabism by funding their radical schools and supporting their clerics may be self-defeating. Still, it is problematic to reject the Islamic sect that is at the core of the Saudi faith as Sunni Muslims. The House of Saud is linked to the House of Wahhab through the marriage of the son of Muhammad ibn Saud with the daughter of Muhammad ibn Abd al Wahhab in 1744. The conservative principles of Wahhabism are virtually impossible to separate today from the identity of the family ruling Saudi Arabia.

Iran represents a somewhat different problem. Even though we do not buy oil directly from Iran, we are a key component of the consumer demand in the worldwide oil market. Our oil requirements expand the market to the economic benefit of the Iranians, whether we buy oil from them or not. Since 1979 the religious clerics ruling Iran have sworn to expand their radical Islamic revolution worldwide. The mullahs continue to fund Hezbollah with \$100 million or more each year. And Hezbollah has worked hand-in-hand with the Palestinian terrorist organizations Hamas and Islamic Jihad to train and send suicide bombers into Israel. Refer to pages 240–241 of the *9-11 Commission Report* for docu-

mentation regarding how Hezbollah worked with al-Qaeda to bring the 9-11 terrorists into the United States via Iran.³

We cannot assume that all Islamic countries have identical interests simply because they are Muslim. There are important nationalistic differences that distinguish the interests of Iran from Saudi Arabia. Moreover, even within Islam there are differences. The Iranians are predominately Shi'ites, whereas the Saudis are Sunnis. The dispute between Shi'ites and Sunnis goes back hundreds of years; ultimately their differences involve determining the legitimate line of authority within the religion stretching back to the death of the Prophet Mohammed himself. National, economic, and religious differences have caused the Islamic nations to fight among themselves, including controversies about even the oil that lies under their various lands.

With oil hitting more than \$60 per barrel, Iran and Saudi Arabia are enjoying huge windfall oil profits that will ultimately flow to the benefit of terrorists and terrorist organizations. We will recommend in the conclusion of this book that the United States take measures to expand domestic oil and natural gas exploration and production despite the anticipated objections of environmentalists. Expansion of the world oil supply can be expected to make a substantial impact on reducing oil prices worldwide. Moreover, reducing U.S. oil dependence on foreign oil imports will reduce the extent to which our dollars end up funding terrorists who in turn intend to attack us.

Still, international terrorists understand the importance of oil to the world industrial economy. Despite their dependency on oil revenue to fund their activities, terrorists nonetheless plan to attack the world oil infrastructure, both to boost the price of oil and to harm the industrial West, specifically the United States.

TERRORISTS ATTACK THE OIL INFRASTRUCTURE

The sabotage witnessed in the continued domestic violence following the 2003 war in Iraq show how easily oil pipelines can be attacked. The Institute for the Analysis of Global Security has created an Iraq Pipeline Watch

that has identified 248 separate attacks on Iraqi pipelines between June 12, 2003, and July 8, 2005.⁴ Terrorists have also attacked oil refineries and port terminals in Iraq. Their goal has been to hurt the Iraqi economy by blocking efforts to restore Iraq's oil industry. One analyst has noted:

Such attacks also have a corrosive influence on the morale of the Iraqi people and their attitude toward the presence of U.S. forces in their country. Iraqis are growing increasingly vexed by the coalition's slow progress in the reconstruction effort and its inability to guarantee a reliable supply of electricity, which is primarily derived from oil. Worse, the sabotage campaign has created an inhospitable investment climate in Iraq and scared away oil companies that were supposed to develop its oil and gas industry.⁵

Estimates are that pipeline sabotage has cost the Iraqi economy an estimated \$10 billion in revenues.⁶

Protecting Iraq's pipelines and restoring the country's oil industry is a top priority in Iraq. In 2003 the Coalition Provisional Authority authorized Operation Task Force Shield and employed some fourteen thousand security guards along the pipelines and at critical oil installations.⁷ But even this did not stop attacks. Copycat terrorists have emulated the success of the Iraqi saboteurs by attacking pipelines in Chechnya, India, Sudan, and Turkey. Pipelines stretch thousands of miles, making it difficult for security forces to secure every available opportunity for sabotage.

To the extent that terrorists can attack pipelines or refining facilities in the Middle East, they destabilize both the world oil markets and moderate Arab regimes. Writing for the Cato Institute in 2001, Jerry Taylor and Peter VanDoren quantified the threat:

In the short run the relationship between supplies and price in oil markets is about 0.1. That is, a 1 percent reduction in supplies induces a 10 percent increase in price. In 1990 after the Iraqi invasion of Kuwait, world oil production decreased from 61 million barrels a day (mbd) to 56.5 mbd, or by about 7.4 percent. Oil prices increased from \$18 to al-

most \$31, or about 72%. World output is now 68 mbd, with the Mideast accounting for 21 mbd (30.9 percent) and Saudi Arabia accounting for 8 mbd (11.8 percent). So a complete Saudi shutdown would produce at least 120 percent increase in price (from \$19 to almost \$42) while a Mideast shutdown would produce over a 300 percent increase (from \$19 to \$76).⁸

The fundamental analysis applies even with today's larger oil numbers. Oil and currency markets immediately jump in times of uncertainty or disruption. A terror attack on oil-production facilities anywhere in the world could drive oil prices up and push the dollar down. Even the anticipation of such an attack could adversely affect markets. The cost of uncertainty and disruptions is the upward repricing of oil, a kind of terror premium on oil. This can also lead to a downward cycle where the ripple effect of higher oil prices depresses the U.S. economy, with further damage being done to the dollar.

TERRORISTS AND THE WORLD OIL MARKETPLACE

Earlier we made the point that government attempts to regulate and control the oil marketplace have largely been counterproductive. We have repeatedly argued that government's most effective role is to ensure the continued operation of a free and open worldwide oil market, where economic forces have the opportunity to best drive forward the critical issues of supply and demand. Terrorists, like governments determined to impose price controls on oil, act to disrupt free markets. In doing so, they clearly understand the economic harm they can inflict.

As noted above, Osama bin Laden fully recognizes the economic impact of terrorism. In a speech on November 1, 2004, bin Laden claimed that al-Qaeda spent \$500,000 on the 9-11 attack, but "America, in the incident and its aftermath, lost—according to the lowest estimate—more than \$500 billion."⁹ In a statement to the Saudi rulers on December 16, 2004, bin Laden called for terrorist attacks on Saudi oil. He again complained that oil was being stolen from the Muslim lands:

You have to realize that our enemy's biggest incentive in controlling our land is to steal our oil. So, do not spare any effort to stop the greatest robbery in history. This [oil and other resources] is the treasures of our current and future generations. They [the West] plot with their allies and puppets in the area to buy our oil at a very low price. All products have gone up in prices several folds except oil itself, which is the basic component of the whole industry. Oil prices do not reflect market reality. Oil was sold for USD 40.00 a barrel, two decades ago, but it went for USD 9.00 a barrel, last decade. A fair price for oil at the present time is a minimum USD 100.00. Oh you Mujahideen, do your best to prevent them stealing it. Focus your operations on it, especially in Iraq and the Gulf. This will choke them.¹⁰

Terrorists clearly see the opportunity to inflict major economic harm by attacking oil resources. In the terrorists' view, disrupting oil markets has the added dimension of preserving Muslim natural resources from theft by the industrial West. Bin Laden's sense of justice, though, continues to appreciate economic bounds. He sounds as if oil at \$100 a barrel would be a fair price. Yet at that price, he would probably begin complaining that we were simply buying the oil with devalued dollars in our continuing determination to rob the Muslim nations of oil resources that were rightfully theirs.

The continued operation of free worldwide oil markets depends upon the ability of governments to defeat terrorism. This will not be an easy battle to win, nor will it be won without extensive cost, time, and determination. Radical Islamic terrorism has already inflicted an economic price on the industrialized West. Had Iraqi oil been flowing freely and at the increased volumes we first projected at the conclusion of the war, we might never have seen oil hit prices ranging between \$60–\$70 a barrel.

AL-QAEDA ATTACKS SAUDI ARABIA

Saudi Arabia is also vulnerable. On the Persian Gulf, the Saudi terminal of Ras Tanura is the world's largest offshore loading facility, one through

which approximately one-tenth of the world's oil supply passes every day. Former CIA Middle East field officer Robert Baer estimates that a terrorist cell hijacking an airplane and crashing into an oil facility such as Ras Tanura could take a large proportion of Saudi oil off the market for as long as six months: "Such an attack would be more economically damaging than a dirty nuclear bomb set off in midtown Manhattan or across from the White House in Lafayette Square, enough to bring the world's oil-addicted economies to their knees, America's along with them."¹¹ Again, just because Saudi Arabia is a Muslim state does not mean that Saudi oil resources are safe from attacks by terrorists. Because the Saudis are exporting oil to the United States, radical Islamic terrorists see Saudi oil resources as fair game for attack.

Saudi Arabia has a complex relationship with radical Islamic terrorists. As we have noted, the ruling family of Saudi Arabia, the House of Saud, has a long relationship with the House of Wahhab, the root of Wahhabism, an extremist sect of Islam that is at the center of the Saudi Arabian Sunni faith. Worldwide, approximately 90 percent of all Muslims are Sunnis. The Saudis have funded Wahhabi religious schools, known as *madrassas*, in Saudi Arabia and around the world. The *madrassas* have been charged with being a breeding ground for terrorists, given the extreme Islamic fundamentalism that is at the core of education in the *madrassas*. The Saudi ruling family has been under increasing pressure from the United States to open up Saudi society to more democratic practices. To the extent that the Saudis move in this direction, they face intense opposition from conservative Wahhabi believers who are determined to keep Saudi Arabia on a fundamentalist religious path.

In April 2002 Saudi Arabia held a telethon that raised approximately \$100 million for the Palestinians. Critics worldwide claimed that the real intent of the telethon was to raise funds for the families of suicide bombers. The Saudi government denied these charges, arguing that the campaign was intended for humanitarian purposes and that the charitable donations would go to providing emergency aid to the two hundred thousand Palestinians whose West Bank homes were being besieged by Israeli forces who were reacting to violence against Israel launched by

Palestinians as part of the Intifada that was under way at the time. The Saudis also argued that the telethon allowed Saudi citizens to vent their anger against the United States and Israel on television rather than in the streets. The event, however, remained controversial. Reportedly a six-year-old boy wearing fake explosives strapped around his waist and carrying a plastic machine gun walked into a donation center during the telethon and made a gift of his plastic toy explosives.¹²

Osama bin Laden was born in Saudi Arabia to a father of Yemeni origins, and much of his anger has been directed against the Saudi ruling family. Prior to the start of the war against Iraq, the United States in 2003 made a decision to pull all U.S. forces out of Saudi Arabia. This was largely in response to intense pressure from bin Laden and Al-Qaeda that U.S. forces on Saudi territory defiled the Muslim holy sites of Mecca and Medina, both situated within Saudi borders. Bin Laden has called for the overthrow of the Saudi ruling family as a necessary step toward establishing a Muslim caliphate that would liberate Jerusalem and unite the Muslim world.

The Saudi government has been torn between a strong alliance with the United States on the one hand and the appeasement of radical Islamic extremism on the other. Saudi Arabia remains the world's largest exporter of oil and is consistently one of the top three importing countries to the United States. Some six million expatriates work in Saudi Arabia, primarily to support the oil industry. Many of these expatriates are Americans who are increasingly targets of terrorism.

On May 12, 2003, Al-Qaeda launched a major terrorist attack in Riyadh, simultaneously detonating three car bombs within three Western housing compounds. Nine U.S. citizens were killed, and fourteen more Americans were among the hundreds who were wounded. In response, Saudi officials arrested Al-Qaeda suspects. By November 2003 Saudi foreign affairs adviser Adel al-Jubeir announced that more than six hundred Al-Qaeda suspects had been arrested and that terrorist cells had been destroyed throughout Saudi Arabia. Then on November 8, 2003, a truck bomb in an Arab residential compound in Riyadh killed seventeen people, including five children, in an attack aimed at Arabian managerial

classes working alongside American nationals in Saudi Arabia. On June 18, 2004, Al-Qaeda terrorists beheaded American hostage Paul Johnson, a forty-nine-year-old specialist on Apache attack helicopters, who worked for Lockheed Martin in Saudi Arabia. An intense search failed to find the terrorists before Johnson's decapitated body was found. Saudi security forces stormed a central Riyadh neighborhood, claiming they had killed the Al-Qaeda leader who had organized Johnson's kidnapping and beheading. Photographs of Johnson's severed head and body appeared on Islamic Web sites to show that he had received just punishment for having trained Saudi security forces on how to use Apache helicopters in antiterrorist efforts.¹³

On December 6, 2004, Al-Qaeda terrorists mounted an assault on the U.S. consulate in Riyadh. Five consular employees, four local staff members, and a contract guard were killed; four other local staff members were wounded. This was the first time a hard target had been attacked, not soft targets such as residence compounds. The attack made clear that Saudi efforts to eradicate or control Al-Qaeda cells had failed. The attack also underscored the continuing threat faced by Western expatriates working in the Saudi oil industry. The significance of this attack was not missed in Israel. Here is how the Jerusalem Center for Public Affairs summed up the incident:

Moreover, when it turned out that nearly all the victims of the consulate attack were local or foreign Muslims, many Saudis, who were at first pleased by the U.S. humiliation, strongly condemned al-Qaeda for disrupting the kingdom's stability. Even the families of the four terrorists killed in the consulate's courtyard (the fifth was wounded and arrested) were denounced by their kin who, despite the custom, did not hold a wake for them.

However, the U.S. embassy spokesman in Riyadh told the news media that al-Qaeda's attacks on Western experts in Saudi Arabia, as well as attacks on Saudi and American installations, were far from over, and that attempts to sabotage the Persian Gulf oil industry should not be ruled out, despite President Bush's assurance on December 7, 2004,

about the Saudi regime's stability and ability to participate in the war against international terrorism.¹⁴

On December 6, 2004, the day of the attack, the U.S. Embassy in Riyadh issued a travel warning advising U.S. citizens in Saudi Arabia to "exercise utmost security precautions" given the heightened threat of terrorist attacks.¹⁵

Some ten days after the attack on the U.S. consulate in Riyadh, a new bin Laden tape surfaced on Arabic Web sites. He claimed the attack demonstrated the instability in Saudi Arabia as a direct result of the corrupt nature of the Saudi regime: "While the struggle in Saudi Arabia appears to be internal, it is part of the struggle between believers and nonbelievers" of Islam. Bin Laden called those who died in the attack "martyrs." He called the Saudi rulers "puppets of a crusader-Zionist alliance led by America," and he called for their overthrow, claiming the Saudi royal family was stealing the wealth of the nation while millions of Saudis were "suffering poverty." The timing of the tape made clear that bin Laden had not lost his focus on causing instability in Saudi Arabia with the ultimate goal of overthrowing the current regime.¹⁶

The radical Islamic extremists target any Muslims they believe are working with the United States or Israel. The terrorists view themselves as involved in a religious war. Any person or state supporting the United States or Israel is a target, whether or not the target is Muslim. Bin Laden's many taped messages make clear that he sees himself involved in an international war. Destabilizing Saudi Arabia and disrupting the oil flow from the Middle East remain top priorities for Al-Qaeda.

OSAMA BIN LADEN ON ECONOMICS

Reading through Osama bin Laden's speeches can be tedious. The rhetoric is very stylized, with much "Allah be praised" language interspersing his attacks against what he sees as the moral corruption of America and our "crusade" to steal from Islam the holy lands of the Middle East. Still, the exercise is important, especially if we ferret out his economic think-

ing. Bin Laden watches America very closely; often it seems as if he is watching our television or reading our news media. His commentary is especially pointed when it comes to his appreciation that he is fighting an economic war against the United States. Let's consider a few of his pronouncements.

On October 19, 2003, bin Laden taped a message for the people of Iraq. In this statement, he referred again to the economic harm inflicted upon the United States by the 9-11 attack. From there, bin Laden goes immediately to the huge deficits America has been running, tying the size of the deficits to our need to support a huge war effort in the Middle East. In speaking about America, bin Laden says:

Never be afraid of their multitudes, for their hearts are empty while their strength has begun to weaken—militarily and economically. This was particularly true after the blessed day of New York, by the grace of Allah, when their losses reached more than one trillion dollars, following the attack and its aftermath.

Moreover, they have had a budget deficit for the third consecutive year. This year, the deficit reached a record peak of more than US \$4.5 billion. Praise be to Allah.

Never be scared of their multitudes, for their hearts are empty while their strength has begun to weaken—militarily and economically.¹⁷

Since this speech, our deficits have only increased by more than one hundred times what bin Laden estimated.

In October 2004 bin Laden sent another videotape to Aljazeera. In this video, he promised to bankrupt America, drawing the comparison to how the Soviet Union was economically destroyed by its war in Afghanistan. Bin Laden brags about how easy it is for him to bait the Bush administration into losing more money fighting Al-Qaeda:

All that we have mentioned has made it easy for us to provoke and bait this administration. All that we have to do is send two Mujahideen to the furthest point East to raise a piece of cloth on which is written al-Qaida,

in order to make the generals race there to cause America to suffer human, economic, and political losses without their achieving for it anything of note other than some benefits for their private companies.

This is in addition to our having experience in using guerrilla warfare and the war of attrition to fight tyrannical superpowers, as we, alongside the Mujahideen, bled Russia for ten years, until it went bankrupt and was forced to withdraw in defeat. All Praise is due to Allah.

So we are continuing this policy in bleeding America to the point of bankruptcy. Allah willing, and nothing is too great for Allah.¹⁸

Bin Laden understands the importance of oil to the U.S. economy. One of his constant themes is that we steal the oil of the Middle East to fuel our corrupt lifestyles. Bin Laden was patient in fighting against the Soviet Union; we can expect he will be equally patient with us. Bin Laden is willing to bet that the United States will not be able to afford politically or economically a protracted global war against radical Islamic terrorism. He knows the true expense involved in occupying both Afghanistan and Iraq may be more than the American public is willing to bear for long. Bin Laden has made clear that he believes we have stolen oil from the Islamic Middle East. He believes in retribution; for bin Laden, terrorism against the United States is economic payback. Bin Laden's calculation is that the United States will run out of patience and money just as the Soviet Union did. He knows that the terrorism exacts an economic price, especially when the world's number-one economic power has become so dependent upon foreign oil, much of which is shipped from the Middle East.

THE THREAT OF ECOTERRORISM

Terrorism from radical Islamic terrorists is not the only form of terrorism that represents a threat to oil. Radical environmentalist groups on the political Left are also capable of targeting oil interests to pursue their political goals. "Ecoterrorists" have pursued an extreme form of politics designed to protect what they consider a pristine natural environment.

Their interests can extend to the protection of animals in their natural settings. To the extent that oil interests are preserved to be inherent “enemies of the environment,” ecoterrorists might well target oil facilities to make their political point. Attacks of this nature are even more likely if the United States pursues the type of policies we recommend here, to expand domestic oil exploration and open new refineries.

The FBI defines ecoterrorism “as the use or threatened use of violence of a criminal nature against innocent victims or property by an environmentally-oriented, subnational group for environmental-political reasons, or aimed at an audience beyond the target, often of a symbolic nature.” In particular, the FBI has characterized the Animal Liberation Front (ALF) and the Earth Liberation Front (ELF) as serious criminal threats. The FBI estimates that ALF and ELF have committed at least six hundred criminal acts in the United States since 1996, with resulting damages estimated at more than \$43 million.¹⁹

Other groups, such as the radical Earth First! innovated with “tree spiking”—the practice of inserting metal or ceramic spikes in trees to damage chainsaws or the loggers who were attempting to cut down trees. ELF has pioneered with “monkey wrenching”—acts of sabotage and property damage against industries that are viewed as causing environmental damage. ELF has also attacked SUVs at car dealerships, igniting jugs of gasoline under vehicles and writing slogans such as “Fat Lazy Americans” on others.

Pipelines, refineries, even gasoline stations are all potential targets in the United States either by radical Islamic terrorists or ecoterrorists. Since 9-11, key oil facilities are better protected, though the lessons of terrorism are that few targets are truly well protected until an attack prompts the full awareness of their vulnerability.

Ecoterrorists fully understand their compatibility with radical Islamic terrorists. Consider this statement by Mike Roselle, an Earth First! radical and self-proclaimed revolutionary, describing the dimensions of his radical environmentalism: “This is Jihad, pal. There are no innocent bystanders, because in these desperate hours, bystanders are not innocent. We’ll broaden our theater of conflict.”²⁰

Hopefully, we will never see ecoterrorists reach the level of sophistication where they could successfully attack major oil facilities in the United States. But their rhetoric and determination to use extreme measures could be tested should oil companies ever receive authorization to begin serious offshore oil exploration or should oil exploration and production activities proceed out of the few small areas in Alaska where oil companies have been permitted to go.

We should have no doubt, however, that responsible environmental groups are well organized and well funded. Choosing to do combat via lawyers, environmentalists continue to take strong, well-calculated steps to block oil companies at every step. We need more refineries. Should we build them? Not until we factor in the costs of fighting the environmentalists who want the refinery situated someplace else. The same logic impacts oil companies who want to expand their U.S. domestic oil exploration and production efforts.

The environmental lobbies can be counted on to work hard to make sure that the U.S. oil marketplace develops no more than it is already developed today. Environmentalists will undoubtedly fight hard to hold on to their myths—that oil is fossil fuel, that we have already hit peak production, that all the oil in the United States has already been found, and that global warming presents such a threat of climate change that we shouldn't be burning hydrocarbon fuels anyway.

If America is to take steps to move from dependency on foreign oil, environmentalists offer us no solutions except to stop driving our cars, stop using carbon-based fuels, and to cut back on our lifestyles—or to start using alternative fuels, none of which have yet proved to be cost-effective substitutes for oil, natural gas, coal, or gasoline.

We move to conclude this book fully aware that the arguments we have presented here are likely to be hotly contested. Environmentalists and conservationists cannot afford to allow Americans to believe that oil might actually be a natural product of the earth, that oil and natural gas are readily available. Many Americans today are about to accept uncritically the conclusion that the energy stranglehold we are facing is inevitable, a concession the radical environmentalists hope our society will

make. Because of this, we feel the arguments we have expressed in this book are essential to establishing a counterview.

Environmentalists and conservationists who permit no debate on their predetermined conclusions are acting every bit as political terrorists—radicals whose ideology has taken such hold of their minds that no room is left for scientific evidence or rational debate to the contrary. Make no mistake about it—environmentalists and conservationists present a clear and present threat to free and open oil markets. This is ultimately a threat to the economy as we know it in America today and to the lifestyle that is enjoyed in the industrial nations around the world. We do not believe that economic advancement is somehow politically or morally wrong. Nor do we believe that industrial society must abuse or exhaust the resources of the earth. Our view is that together we can advance, both materially and spiritually, within industrial society, seeking to embrace science and technology for the betterment of the human species and the earth worldwide.

Fortunately the First Amendment remains in place and conservative books are not yet banned from print. What we urge here is open minds, especially as we proceed to make recommendations that we know environmentalists and conservationists are likely to ridicule, particularly if they feel at a loss to make effective logical refutation.

CONCLUSION

TOWARD U.S. OIL INDEPENDENCE: AN ACTION PLAN

Our dependence on foreign oil is like a foreign tax on the American Dream—and that tax is growing every year.

George W. Bush, June 15, 2005

IF WE BEGIN WITH the assumption that markets anticipate future developments, we have to ask a fundamental question: Why don't industries around the world act as if we are running out of oil? Automobile manufacturers make plans to introduce new models of internal-combustion gasoline-fueled cars. Hybrid automobiles are being developed, but they are yet a novelty, and the verdict is not in on their real costs of operation and maintenance. We continue to put millions into the maintenance of our local roads and interstate highways. Quite simply, the alarmist cries of environmentalists and conservationists have not translated into panicked reactions within the automobile industry, one of the key mainstays of the U.S. economy.

We are told that America is addicted to oil and natural gas. Yet if we carry forward the analogy of drug addiction, we can again ask the same question. Any drug addict who has reason to believe his drug supply is coming to an end has only one driving purpose that begins to dominate his life, namely, How do I get more drugs? The American consumer has heard all the rhetoric that we are running out of oil, yet we continue to

calmly drive to the gas station and pay increasing prices to fill our gas tanks. Yes, we grumble about the price. Still, Americans are not hoarding gasoline, nor are they demanding from Congress answers regarding where the next fill-up is going to be found.

If we assume that markets and consumers are good barometers of future economic developments, we could reasonably conclude that the arguments of the environmentalists and conservationists have been heard but not fully believed. The rebuttal from the political Left would be that Americans are too lazy or too comfortable to care. Moreover, the political Left all too often lectures us from their ocean-front homes in Malibu while they drive around in their BMWs to their private jets, talking all the while on their cell phones—all of which ultimately depends on hydrocarbon fuels in one way or another. If Americans truly felt that a shortage of oil was on the verge of adversely affecting our economy or our lifestyles, the outpouring of concern would be immediate and loud.

In this final chapter, we are going to call for seven steps that we believe will allow us to focus attention on the arguments we have raised in this book. We see our seven steps as an action agenda that will allow the alternative theories expressed here to be taken seriously. First, however, we are going to ask a seldom-asked question—Why is the oil industry today the industry Americans love to hate?

WHY DOES THE OIL INDUSTRY FACE SUCH HOSTILITY TODAY?

In the early days of the oil business in the United States, less than one hundred years ago, wildcat explorers were seen as American heroes. We admired their willingness to risk everything as they drove into fields and drilled for black gold. If the wildcatters were lucky, they got rich. If not, they lost everything. We admired their daring and benefited from the oil they found.

Even the popular culture at the mid-twentieth century continued to admire oil people. We saw how *The Beverly Hillbillies* came to California and enjoyed a Hollywood lifestyle because black gold came bubbling up

from their country backwater fields. We admired J. R. in *Dallas* because of his bold thinking and oilman ways. Yet today we have come full circle.

Imagine if an oil executive on vacation went hunting in Alaska. What if he shot at a wild animal and missed it? If the errant bullet struck the ground and up bubbled oil, there probably would be no end to the trouble. His hunting license would be investigated. The Animal Liberation Front (ALF) and People for the Ethical Treatment of Animals (PETA) would rush to the scene to defend the animals. Lawyers representing environmentalists would file briefs in court blocking any serious oil exploration, arguing that the environment would be destroyed if any oil finds were to be developed commercially. The network media would go into a feeding frenzy, blaming the oil companies for their irresponsibility in hiring executives who supposedly hunted wild animals while slyly looking for oil. Needless to say, the oil executive's career would be destroyed.

We may not believe the alarmist cries of the political Left that we are running out of oil and that any series of storms and other natural phenomena are because our burning of hydrocarbon fuels has dangerously warmed up the earth. Still, environmentalists and conservationists have managed to reframe our view of the oil industry. We now think of carbon as dirty, not remembering that plants view carbon dioxide as the life-giving element they need to breathe. We think of oil as spills that contaminate beaches, not the fuel that keeps us going.

In almost every aspect of life, Americans depend upon carbon-based fuels. We can drive on our highways from one end of the country to another or simply get on an airplane and be anywhere we choose to go within a few hours, regardless of distance. Our homes and schools are heated in the winter and air-conditioned in the summer. Trucks drive groceries to the stores where we casually shop for food. The list goes on endlessly. Almost every aspect of modern life depends in one way or another upon our burning hydrocarbon fuel. Yet oil company executives are reluctant to proclaim their professions at public meetings for fear they might be attacked as spoilers of the earth.

Subconsciously, we have bought into the propaganda. Yet today our beaches are cleaner than ever, our air is more breathable, and our rivers

run with purer water. Even in Cleveland, Ohio, the heart of the U.S. Rust Belt, fish again live in Lake Erie, the beaches along the waterfront are available for swimming, and the Cuyahoga River no longer catches fire from pollutants.

We have advanced to the point where we burn more hydrocarbon fuel than ever while our environment continues to make substantial gains in health and vitality. American industry, including the oil business, has embraced modern technology, including incorporating reasonable environmental protections that have become part of today's responsible business operations. For these achievements, the oil business receives no acknowledgment. Great progress has been made in the last fifty years. Still, radical environmentalists and conservationists sound like they will not be satisfied until we quit using hydrocarbon fuels altogether.

We are conservatives politically, and we believe that America should advance to maintain a strong position in the world. We continue to see American economic, religious, and political freedoms as standards that continue to benefit us at home and profit countless others around the world. We are proud to proclaim our confidence in America, and we share President Bush's enthusiasm that economic, religious, and political freedoms live within the heart of every human being, not just Americans.

Radical environmentalists and conservationists have become opponents of oil. Their arguments end up placing us in a stranglehold. Consider how they have sought to position oil in our thinking: oil is fossil fuel, we are running out of oil, all the oil in the United States has been found, we are at peak production, half of all the oil the United States ever possessed has already been burned, we are becoming dependent upon foreign oil. Next they move to make sure we see the use of hydrocarbons as noxious: we are throwing too much carbon dioxide into the air, this creates a greenhouse effect, the earth is warming up, our climate is changing, the ice caps are melting, the seas are rising, we are suffering increasingly violent storms as worldwide temperatures get hotter and hotter.

Environmentalists want us to harm no animals, move no trees. The "balance" they want with nature is one in which human beings play a minimalist role—maybe there are even too many people. After all, the

earth would be better off with fewer of us. We should use wind power, solar power, hydrogen power—none of which has proved to be as powerful or as cheap as hydrocarbon fuel. But, of course, we shouldn't use nuclear power, because spent nuclear fuel harms the environment. There really are no alternatives but to reduce our lifestyle. Should we go back to horses for transportation? Maybe, unless we are inherently cruel to horses by placing saddles on them and riding them.

We have countered this thinking throughout this book. Our approach is positive. We believe we can have a strong oil industry and still benefit the environment.

We believe we have paid our foreign partners fairly for the oil we have bought. The billions of dollars we have sent overseas to buy oil have provided ample resources for those countries to advance for the betterment of all their citizens. Since World War II we have been involved as peacekeepers to resolve countless wars and political crises in the Middle East, including supporting the peace process over the last two decades in the effort to resolve conflicts between the Palestinians and the Israelis. We are on record for decades as encouraging Middle Eastern countries to introduce more democratic political and economic processes that would share their oil wealth broadly within their societies. We see no credible evidence that America intends to establish permanent armies in the Middle East so we can confiscate oil.

We believe the earth contains abundant oil, enough to meet all our needs as the world industrializes and moves to improve lifestyles around the globe. We do not see the oil business as exploitation, colonialism, or imperialism. We believe that human beings can enjoy material possessions and still be religiously strong.

THE SEVEN STEPS

Our agenda for moving forward centers on the following seven action steps. If these steps are followed, we believe we can restore America to energy independence while also strengthening the international oil markets for the benefit of the developed and emerging countries around the

globe. We believe the recommendations we make here will advance the cause of energy for the benefit of all. We invite debate with our critics.

1. PROMOTE SCIENTIFIC RESEARCH TO INVESTIGATE ALTERNATIVE THEORIES.

The National Science Foundation (NSF) should fund an aggressive program of scientific research to investigate the deep, abiotic theory of the origin of petroleum. NSF should explore Thomas Gold's hypotheses that a deep, hot biosphere exists within the mantle of the earth, that oil is a natural product of the earth, one that seeps up toward the surface of the earth along natural fault lines at very deep levels. We invite scientific research to determine if oil truly is fossil fuel, as has become conventional wisdom, or if the alternative abiotic theory can be proven with sufficient scientific rigor as to merit widespread public acceptance.

We would invite similar NSF research designed to explore the fundamental premises of the greenhouse effect, global warming, and climate change. Research grants should be awarded fairly, with grants going equally to opponents of the conventional views advanced by environmentalists and conservationists, not just those scientists on the political Left. Unfortunately, science itself has become politicized within our universities today, largely due to grants and subsidies that have made their science departments dependent on a growing federal government; so the NSF will have to take specific steps to invite participation from scientists who are political conservatives.

Science should be open-minded and nonpartisan, but today liberal thinking dominates our universities. To get a balance of views, specific steps will have to be taken to recruit conservative scientists to the task. Hopefully, the NSF can encourage an environment in which the studies proceed as objectively as possible and the results are presented to the American people as fairly as possible.

2. EXPEDITE LEASES OFFSHORE AND IN ALASKA TO ENCOURAGE OIL EXPLORATION.

The federal government should make a concerted effort to grant new oil

exploration leases in Alaska and offshore on both coasts and the Gulf of Mexico. Fast-track criteria should be established to review oil company applications where the applicant can demonstrate a prior history of safe and environmentally sound operations offshore or in Alaska. New applicants should be provided clear and simple criteria, possibly in the form of a checklist that will facilitate the approval process.

We should instruct the Department of Energy to cut through administrative barriers. We should be prepared to introduce legislation to reduce the impact of harassment lawsuits launched to block any of these new leases from being awarded.

Special consideration should be given to advance the lease applications of oil companies that propose to explore deep within the earth, through the process of drilling ultradeep wells, according to the hypothesis of the deep, abiotic theory of petroleum's origin. These exploration efforts will provide additional information as we explore the scientific evidence to support or refute the abiotic theory.

Our goal should be to identify as quickly as possible the quantity of oil that lies offshore and throughout Alaska. We wonder if environmentalists and conservationists have resisted granting leases because they do not want the American public to realize that America still has available huge, possibly unlimited reserves of oil yet to be discovered. Let's explore for additional oil in a responsible fashion, realizing that much oil offshore and in Alaska remains yet to be found.

3. PROVIDE TAX CREDITS FOR DEEP-DRILLING OIL EXPLORATION.

As the second point above expresses, deep and ultradeep well drilling efforts should be encouraged. Tax credits can be established to offset the additional costs of developing environmentally safe deep-drilling techniques and machinery. We should encourage oil companies to return to previously developed sites to see if any additional oil reserves not previously discovered lie at deeper levels below. Very possibly wells that have been considered exhausted might be revitalized if only drilling efforts had continued below the initially discovered oil reservoirs. As has been

the case in America, a well thought-out formula of economic rewards to compensate risk has been proven to stimulate important corporate initiatives to explore new dimensions even in well-established industries.

These tax credits should be provided for deep and ultradeep drilling oil exploration wherever the technology is applied within the continental United States, offshore, or in Alaska. Should the deep-drilling efforts prove successful, we might return the United States to oil independence.

The example of Russia is illustrative here. Once considered oil-poor, the deep-drilling techniques applied by the Russian scientists and oil companies have positioned Russia as one of the leading oil suppliers in the world. Today few have any doubt that Russia is oil self-sufficient. The United States should take pains to see if the science and technology of deep-drilling that the Russians have applied since the end of World War II might also produce similar results in the United States.

4. CREATE AN OIL RESEARCH INSTITUTE TO SERVE AS A CLEARINGHOUSE OF OIL INDUSTRY INFORMATION.

We propose the establishment of an oil research institute to serve as a public clearinghouse of oil-industry information. We should encourage information to be placed in the database by oil companies who want the public to understand modern oil industry exploration and production technologies that are environmentally friendly. The database should include comprehensive information on oil reserves, exploration, and production worldwide, building upon the extensive information already made available by the Energy Information Administration of the U.S. Department of Energy.

Oil industry funding for the oil research institute should be encouraged. The board of directors should be drawn broadly, including scientists and independent experts in addition to oil company executives.

The institute can also commission additional research studies designed to supplement the National Science Foundation grants proposed in our first point. The oil research institute data should be readily available on the Internet. An institute headquarters could serve as a site for scheduling frequent industry and scientific conferences open to the public.

The idea is not to launch a public-relations effort to promote the oil industry but to create an open and unbiased repository for comprehensive oil industry information. We should not be afraid to show the oil industry in a positive light when unbiased information supports positive conclusions. Americans should be reminded that the oil industry has been the bedrock of our strong and lasting economy.

Today the oil industry has no forum outside commercial advertising to tell its story to the public. The oil research institute will be that forum, balanced by criticism and concerns that can be presented fairly and examined critically, with judgments resulting as much as possible from scientific, objective evidence, not politically motivated predetermined conclusions.

5. DEVELOP A PUBLIC BROADCASTING TELEVISION SERIES DEVOTED TO THE OIL INDUSTRY.

We propose the development of a PBS television series devoted to educating the public about the oil industry. Few of us have actually seen the advanced technologies that are being applied in modern oil exploration and production. All of us remember the few environmental disasters attributable to the oil industry over the last fifty years. We are generally unaware, however, of the advanced technologies that are currently being applied in environmentally aware offshore oil drilling or in Alaska.

Again, the series should not be designed as an oil industry public-relations effort. Instead, we should invite oil industry experts and executives to tell the positive side of the story, the side the public rarely hears. The series should be designed to explore the scientific theories and countertheories we have advanced here. Is oil a fossil fuel? What is the evidence that hydrocarbon fuels have caused global warming? Are we in an interglacial period, one that is more responsible for our current world temperatures than is human activity? The public has been hammered with political opinions, but the scientific questions are rarely explained, nor are the relevant data and arguments examined in a way that is comprehensible to a person who is not an expert or a scientist.

Public education should be a top goal in a discussion as vital to America as the future of the oil industry. A PBS series that goes to oil

exploration sites, that sees into oil production, that visits gasoline refineries, should be interesting to a public that wants facts, not simply opinions. All sides can be presented in this show. Environmentalists and conservationists should have time to explain their viewpoints as long as their critics are also heard fairly. Television is an important and powerful visual media that needs to supplement information that is available in printed publications or on the Internet.

6. REESTABLISH A GOLD-BACKED INTERNATIONAL-TRADE DOLLAR.

The U.S. government should reestablish a gold-backed dollar that is designed to be used only in the settlement of international trade transactions. This international-trade dollar would be designed as a separate currency. We would be returning to the advice of our Founding Fathers who believed that gold-backing was critical to any U.S. currency that would have enduring strength.

The gold-backed international-trade dollar would be an electronic media, not necessarily a printed currency. Still, the international-trade dollar would have a fixed value expressed in a specified quantity of gold, to be held at Fort Knox, or at participating international banks in various cities around the world.

International settlements could be settled by changing the beneficial ownership of U.S. gold held in the participating international banks to reflect payments to countries whose exports to the United States makes their international balance of payments favorable to them. We would be taking serious steps to keep our currency as the dominant currency in which international trades are settled worldwide. The goal would be to move toward a more reliable standard so that our international trading partners could once again hold U.S. currency reserves in a fixed-standard international-trade dollar.

We believe that establishing a gold-backed international-trade dollar is an important step to preserving stability and value in the world's international trade market for all commodities bought and sold worldwide, including oil.

7. ESTABLISH TAX INCENTIVES FOR OPENING NEW REFINERIES IN THE UNITED STATES.

We need additional refineries in order to remove an important bottleneck with the U.S. oil industry. Right now, even if we found huge additional oil reserves that are readily available, we would be limited in getting the additional oil to market simply because our refineries are already running at or near full capacity.

Tax incentives should be established to encourage the construction of new refineries in the United States. Again, we should establish an expedited approval policy for those oil companies that have a proven track record in operating environmentally safe refineries. As we suggested before, a checklist should be developed for new business entrants to demonstrate their capability to perform important requirements specified for oil refinery operation.

The goal would be to get enough new refineries built so that adequate supplies of various grades of oil products, ranging from gasoline to heating oil, can reach the market as demand increases. Once again, tax incentives may be important in providing sufficient financial rewards to motivate oil companies to make the substantial investments required and to take the economic risks involved in developing new refinery capacity.

Similar tax incentives should be established for oil companies that seek to expand existing refineries since the goal is to increase the overall refining capacity, not just to build new facilities.

CONCLUSION

The black gold stranglehold we are facing is largely one of our own making. We do not expect oil company executives to embrace immediately the concept that oil is not fossil fuel. Many of the ideas presented in this book are certain to jolt minds that have accepted uncritically, almost as articles of faith, the understanding that we are running out of oil or that our burning of hydrocarbons is bringing on climate changes with disastrous effects.

We strongly believe that we have within our means the ability to increase our supply of readily available oil. If we allow the oil industry to develop creatively, we should be able to meet our growing demand for hydrocarbon fuels well into the foreseeable future. We have been able to institute measures that allow us to burn hydrocarbons today more efficiently, with less environmental damage, than was the case only a few decades earlier. The economies of America and the world are far stronger and more resilient than critics allow. So, too, is the world more abundant in resources than we generally think.

Some one hundred years ago our major forms of transportation were horses and railroads. Some one hundred years into the future will we still be driving internal-combustion gasoline-fueled engines? Possibly. Yet the history of human innovation strongly suggests that new, economically efficient alternative technologies will develop. Tomorrow we may understand the physics of nuclear batteries, and we may all be driving nuclear cars. We are encouraged by the trends we have discussed to see increased usage of natural gas and a return to explore the potential of nuclear power. As we have discussed, if we can increase our use of natural gas and nuclear energy to power electricity to our homes, offices, and cities, then we can increasingly reserve the use of oil to provide gasoline for transportation. This shift in the mix of energies we use can assist us as we move once again toward energy independence.

Right now, even with oil prices increasing, petroleum fuels are still reasonably affordable alternatives. We challenge readers to reexamine many preconceived ideas. What if oil has nothing to do with decaying ancient forests or dead dinosaurs? What if the probabilities are actually more in favor of a new ice age beginning, and it is unlikely that the ice caps will melt because we are causing global warming? What if we truly have all the oil we will ever need if we just look deep enough within the earth?

We continue to observe that the world has never had as large a quantity of proven oil reserves as we have today. Even the most radical environmental skeptic is still able to fly comfortably across country to give a speech attacking the oil industry, having published the speech in advance

on the Internet, while counting on being driven in a taxicab to a heated and air-conditioned hotel, where the television will show dozens if not hundreds of channels, while planning to call home to the family by cell phone to say good night. How much of this would be possible without burning hydrocarbon fuels or using petroleum products?

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Moving through the postwar ... we will need ... economists, and politicians who are willing to think creatively to ... the nation works to meet our ever ... challenges. We hope this book will encourage all who read it to add their voices to the debate we have tried to stimulate within these pages.

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Moving through the twenty-first century, we will need scientists, economists, and politicians who are willing to think creatively as together the nation works to meet our ever more difficult challenges. We hope this book will encourage all who read it to add their voices to the debate we have tried to stimulate within these pages.

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rogue terrorist regimes, and the political agenda of radical environmentalists and conservationists who obstruct the use of oil reserves currently controlled by the U.S. government. The authors offer an understanding of the dangerous situation America faces because its currency is no longer tied to any precious and truly scarce metals such as gold, as it was until 1973. This situation could easily lead to the devastation of the U.S. economy if Middle Eastern countries are able to enact current plans to accept only the Euro or gold-backed currencies such as the Gold Dinar instead of the U.S. dollar as the standard currency for oil.

Black Gold Stranglehold will dramatically change the debate about oil. The significance of its message is sure to cause thoughtful people to reconsider the current dependence of the U.S. economy on imported oil.



JEROME R. CORSI is the author of *Atomic Iran* and the coauthor of the *New York Times* number-one bestseller *Unfit for Command*. The author of many articles and books and a Harvard Ph.D., he lives in New Jersey.



CRAIG R. SMITH is the chairman of the board of Swiss America Trading Corporation, one of the largest and most respected investment firms in the United States. He is an author, commentator, and frequent radio and television guest. He and his family live in Arizona.

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DID YOU KNOW?

- We are not running out of oil now, and we may never run out of it.
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- Carbon dioxide, the bogeyman of the radical environmental movement, is the “food” of plants and tree.
- If we grow more trees, they will “consume” the carbon dioxide released by automobiles.
- Scientific evidence suggests that in the coming decades the earth is as likely to cool as it is to warm.
- “Global warming” is a scientific hoax at the center of a radical political agenda of environmental extremists.



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